

THE MANUAL OF
PRACTICAL
GARDENING

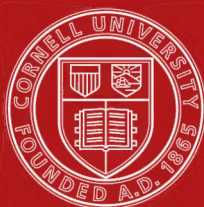


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Garden paths should lead to some definite object, a summer-house or a garden seat, for example. A paved path is attractive and affords a dry footing at all times.

The
MANUAL
of
PRACTICAL
GARDENING

An Everyday Guide for Amateurs

Edited by
H. H. Thomas
Editor of "Popular Gardening"



Illustrated by
47 Half-Tone Plates
and numerous Sketches
in the Text

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PREFACE

IN "The Manual of Practical Gardening" the reader will find helpful information on all the essential details of gardening, for it is attention to details that makes for success. The chapters deal with all the favourite hardy and greenhouse flowers, ornamental trees and shrubs, the rock garden, fruit trees and vegetables, and give practical and concise advice concerning their management.

The design and lay-out of the garden form the subject of the opening chapters : these matters are all-important, for if the planning is faulty it will be difficult to make the most of the available ground, and to construct a really beautiful garden.

The successful gardener is he who does the right thing at the right time, and it is of great importance that he shall know the most suitable time for carrying out the various tasks which arise as the seasons come round. The pages devoted to "A Year's Work in the Garden" will serve to remind the reader of the most pressing work to be done throughout the months.

Full details are given of the pruning of trees and shrubs, Rose and fruit trees, for their successful management depends largely on the way in which pruning is carried out. If the branches are pruned at the wrong time of year or incorrectly, the display of flowers will be jeopardised and may indeed be ruined.

The illustrations from photographs show many charming garden scenes and provide the reader with suggestions which he may care to adopt for the improvement of his own garden.

H. H. THOMAS.

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THE MANUAL OF PRACTICAL GARDENING

CHAPTER 1

The Ideal Garden

EVERY day, even every hour, spent among the flowers is a little heaven of delight if the garden is one you yourself have made, and if the flowers are those you have raised. From the time the first leaves push through the soil until they wither and disappear, from the time the first flower-buds open until the last lingering blossom fades, delight follows on delight.

They form, as it were, a book of romance; each day is a fresh page in the story and each flower a character in the tale. And when the last page is turned, when the last flower of summer has faded, feelings of regret are lost in fragrant memories that will last until spring comes once again, and new pages in the old cover are turned.

The joys of a garden throughout the season are inexhaustible. Every year, every month, almost every day, fresh treasures are revealed by the well-stocked beds and borders. The garden never stands still; from day to day, even from hour to hour, it changes, and always there is something to do. There are the dead blooms to be picked off, the soil to be hoed, a wayward shoot to be curbed, a weakly one to be

encouraged, something to be supported or repressed.

The garden calls for our attention, our care, our forbearance, our kindness, and even our courage, and according to the measure of our devotion to its needs will be the degree of success that attends our efforts.

We must have a full garden if it is to be really satisfactory. Let there be flowers here, there, and everywhere, not only filling the beds and borders, but covering poles and arbours, hiding the walls and fences, smothering the path verges, and filling the cracks and crevices in the paved walks; in fact, growing wherever flowers will grow.

We must make the flowers love the garden, and that can be done only by providing adequately for their needs. Let us raise them from seeds, grow them from cuttings, divide them when they grow old, and plant them wherever there is room.

Leave the trees and plants undisturbed for as long a time as possible if you would invest your garden with romance and mystery; if you would make of it a

pleasance where the flowers love to grow, and not a mere strip of soil in which the gardener's hand is too obviously displayed.

It is easier to plant harmoniously than discordantly in a garden, for even violent contrasts are toned down by the deep green leaves of trees and plants that play such an important part in the making of a garden.

Perhaps we attach too much importance to bright colours. We think that they alone make a garden beautiful. Yet we have only to imagine a flower-bed filled with leafless plants in bloom to realise how untrue it is to suppose that a beautiful garden can be made with rich colour alone. We admire the glorious crimson Roses, but do we realise that their charm depends largely on their close association with the rich deep green leaves among which they nestle? If we fill a bed with scarlet Geraniums on the lawn its brilliance impresses us, yet it depends for its show largely on the green verdure in which it is set.

Frame the Garden with Flowers and Leaves. And so it is with gardens generally; they depend for their charm very largely upon their setting. But how few of us are able to command the environment that we most desire! The environment is there, and we must set our garden in the plot we are fortunate to possess, and so alter the outlook that it furnishes a suitable frame for the picture of rich and tender colouring that we purpose to put in it.

If a plebeian fence forms the boundary, we must screen its nakedness with flowering or fruiting trees, or with climbing and

twining plants, thus disguising the hard, straight line of the boundary and making it part of the garden itself. If this is done, it is impossible to tell exactly where your garden ends and that of your neighbour begins. Within the frame thus formed we shall have the flower-beds and borders, the rock-garden and rosery, the fruit-garden, and the fernery, each forming part of a harmonious design.

Sunshine and Shadow. There must be shade and sunshine in the garden—sunshine for the flowers, shade for the looker-on. And as a foil to the brilliance of well-filled beds and borders there should be a corner of hardy ferns, not the common kinds of the woods and lanes, but some of those choicer sorts with tasselled and crested fronds that are the embodiment of grace and beauty; in the summer months they furnish an incomparable stretch of green on which the eye rests with relief.

The flowers of high summer are innumerable, and the wonder is not that our gardens are so full of bloom at that season of the year, but that there is any vacant space at all. The satisfying garden is that which is really full of blossom, where the plants jostle each other, where their flowers commingle, and in which no soil can be seen.

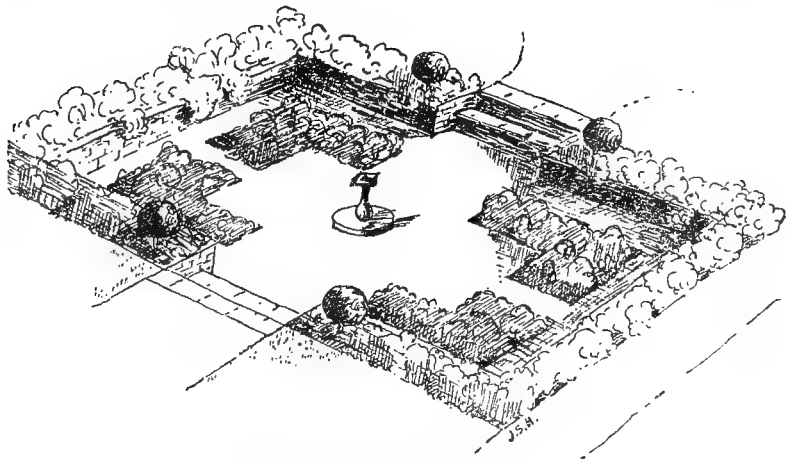
And how great a wealth of material is at command! There are, to mention only a few, tall perennial Larkspurs in pale and deep blue, the white Madonna Lily, the rose-red Valerian (*Centranthus coccineus*), double and single Pyrethrums (masses of white and coloured blossom), the lovely pale mauve Catmint (*Nepeta Mussinii*), scarlet Geum, Stocks, and Tiger

Lilies. There need be no attempt to keep them unduly tidy, though the Larkspurs have to be supported with some precision ; for the rest, a few bushy sticks placed here and there among them are sufficient to keep the flowering stems upright, and the result is a riot of bloom that appeals as much by its profusion as by its colour.

Favourite Old-World Flowers.
One may have tall chimney Bell-

their inimitable charm, their precious and haunting memories. Many of the old Roses are not worth growing nowadays, but room must certainly be found for the Thornless Rose (*Zéphirine Drouhin*), if only for the ease and pleasure with which one may handle the smooth branches at pruning-time, and pluck the flowers through the summer days.

A few of the old crimson Roses



A design for a sunk formal garden.

flowers (five-feet spires of blue in July), Hollyhocks, Sweet Peas, Sweet Williams, low-growing Bell-flowers, the giant Jacob's Ladder, purple Clematis trained up rustic poles, early Border Chrysanthemums, the mauve Erigeron, or summer Starwort, and other flowering plants and bushes equally good-natured ; it seems as though their mission in life were just to grow and blossom and to give pleasure.

Let there be a commingling of the new and the old—the new flowers for the sake of their vigour, their perfection of form and colour ; the old flowers for their fragrance,

ought still to be found in every garden, such, for example, as *Louis van Houtte*, *Victor Hugo*, and *Prince Camille de Rohan*. Of new or modern Roses which bear sweet-scented blooms, there are, for example, *Mrs. George Norwood*, *Mrs. E. J. Hicks*, *Columbia*, *Prince of Wales*, the *Premier*, *Duchess of Wellington*, *Hugh Dickson*, *General McArthur*, *Madame Abel Chatenay*, and *Francis Gaunt*.

The modern varieties of rambling Roses have ousted practically all those of other days, if one excepts a few such as *Félicité Perpétue* and *Aimée Vibert*. The old sorts

do not compare for brilliance or abundance of blossom with Alberic Barbier, Hiawatha, Dorothy Perkins, or Dr. van Fleet, and innumerable others.

Of all climbing Roses introduced during recent years there has been nothing to eclipse or even to equal in splendour that brilliant scarlet variety named Paul's Scarlet Climber. It forms an entrancing picture in the garden in high summer, and the blooms have the great advantage of keeping their colour well.

Little Things that Count. It is always the little things that count, no less in a garden than elsewhere. Very often their cost is insignificant, but how great a difference they make! A garden may be lifted out of the commonplace by such a little thing as an arch of Roses, a sundial on the lawn, a paved path, or even a seat correctly placed.

A garden may have, or may not have, character. The presence or the absence of this indefinable quality is at once apparent. If there is character in a garden, one is impressed by it. If character is lacking, the garden makes no appeal to the onlooker, though possibly the owner, viewing it through spectacles of rose, is unaware that it has any faults.

What Gives Character to a Garden? Chiefly little details that were well thought out when the garden was in process of formation, or that have been made from time to time, as the owner realised that something was lacking. Most of us feel that our gardens are not altogether satisfying. We realise it when we see pictures of other and

more beautiful gardens. What is it that makes these exquisite old-world garden scenes such a delight to the eye and so restful to the mind? Is it old age? Partly, perhaps; but that is not the whole story. The explanation is found in the correct placing of the trees and plants, and in the creation of effects—in short, in design.

We may have a garden full of the most wonderful flowers—a botanic garden, for instance, of rectangular beds of plants, but it makes no appeal to our aesthetic sense. There must be an appeal to the imagination.

What a difference it makes if we have to go through a wrought-iron gate, through an opening in a trim hedge, or under an arch of Roses, to get into the garden! At once a sense of expectancy is created—one realises that there is something to see beyond, and one begins to wonder what it is.

A Gateway Makes a Difference. If, on entering, one sees a sundial, its pedestal fringed with flowers, a fountain whose tumbling spray sparkles, rainbow-tinted, in the sunlight, a pillar aflame with rambling Rose, a stone-flagged pathway winding in and out of trespassing flowers and leading up a short flight of steps to a garden seat, surrounded perhaps by a low stone balustrade—such little things as these, how they do help in giving character to a garden. They make it a place of charm and contentment, a haven of peace wherein the gardener who has made it may feel that he has tilled a little bit of "God's own earth" to his own great and lasting advantage.

CHAPTER 2

Planning and Planting

WHEN you step out of the house into the garden, what are your first impressions? If there is no charm in the first view, the garden is apt to prove disappointing as the months pass by. The view of the garden from the house is one that matters a great deal, therefore every effort should be made to alter the design, if necessary, so that the first glimpse of the garden shall be one that attracts and delights the onlooker.

Let the garden beds and borders come right up to the house, so that immediately you set foot out of doors you are actually in the garden, among the flowers, and not merely on the way to it. That is easily done by having a wide, paved path outside the door that gives on the garden, and by planting low-growing plants in the chinks, such as Thyme, Pinks, and the bright green moss-like *Arenaria caespitosa*. If there is room, a border may be made on each side of the path, wherein hardy Ferns can be planted if the position is a shady one, or Roses if it is in the sunshine.

In garden planning it is wise to keep the chief features separate and distinct from each other. If there are patches of herbaceous border here, and other patches somewhere else, scattered Rose bushes and fruit trees, and bulbs in

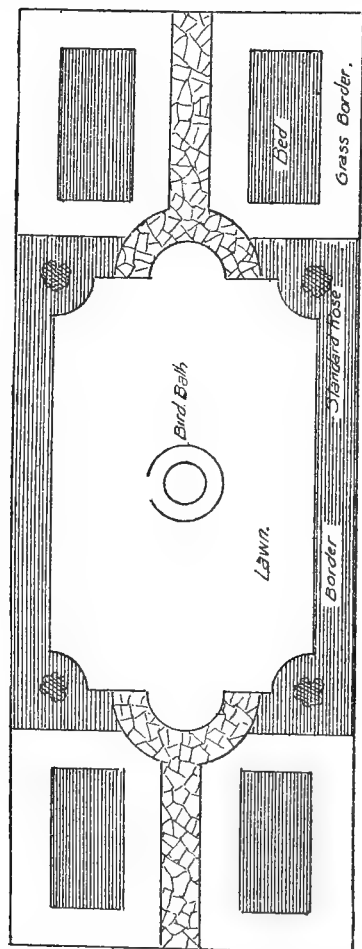
all sorts of places, not only will the garden be lacking in the charm that comes from reasonable orderliness, but it will be difficult to manage and will never look its best. Let the herbaceous border be free from Roses, Carnations, and the "summer bedding" plants; these ought to be grown in separate beds, the Roses, at all events, forming a little garden by themselves.

If the garden is flat and rectangular, let us relieve its flatness with some of those glorious pillar Roses that flame with bright colour in the summer months, and its straight lines with gracefully curving walks of which the corners are veiled with groups of flowering shrubs or treillage covered with Clematis and Honeysuckle.

Privacy is an essential thing; if the whole of the garden is exposed to view at a glance it must be devoid of charm. That which is hidden possesses attraction, so let us hide something, whether it be a Rose garden, a little formal garden, a rockery, or pool, even only a garden seat beneath a canopy of clustering Roses.

A beautiful tree rightly placed may alter the whole character of a garden. A silver Birch with Bluebells and hardy Ferns in the ground beneath will be a joy in spring when the leaves of the tree, the

flowers of the Bluebells, and the fronds of the Ferns are unfolding, and again in the autumn, when the leaves of the Birch, "queen tree of



An original design for a long, narrow garden.

the woods," don their mantle of pale gold.

If the ground is flat, why not raise it here and there and sink it elsewhere, building a few steps that

shall lead from the lower to the higher level? If it is commonplace, make a little paved garden of formal design, and fill the beds with fragrant old-fashioned flowers, though choosing always up-to-date varieties. Why not a sundial on the lawn or on a pedestal amid the Roses?

Pathways, their obtrusiveness veiled by arches of flowering plants, should lead from one feature to another; not only will they serve their purpose well, but in themselves they will add to the attractiveness of the garden.

Flower-beds of Simple Design.

If there must be formal flower-beds devoted to displays of spring and summer flowering plants, let them not be of bizarre and complicated design, with sharp-pointed corners, scrolls, and so on. Those are usually rather hideous and add immensely to the work involved in the maintenance of a garden.

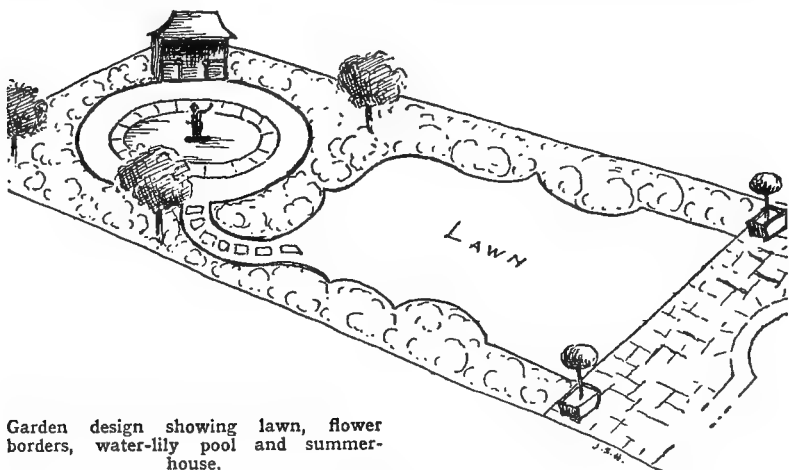
Group the Plants. Choose the best kinds of plants and grow at least two or three of each kind, so that they may form bold groups and help to give form and rich displays of colour. Every year new plants and new varieties of old plants are introduced to gardens, and if we would make the most of our ground we cannot afford to neglect them. Most of them are well worth cultivation, and are improvements on those which, in the course of time, they are destined to supplant. Let us consult the catalogues and keep our gardens up to date.

There are lots of little ways in which a garden can be improved without much expenditure of time or trouble, and it may be worth while considering whether your own

garden cannot be made more attractive and satisfying. Once the garden is laid out we are, as a rule, loth to disturb its design ; we do not care to dig up the paths and make them into flower borders, and to lay down fresh walks elsewhere, for that sort of thing causes a good deal of labour.

tour of the garden, thus getting fresh points of view. Further, the effect of the arches is to conceal the outlook, and that in itself is enough to raise some degree of expectation as to what lies beyond.

Winding Walks are generally more satisfactory than straight ones, providing they have a



Garden design showing lawn, flower borders, water-lily pool and summer-house.

Alterations which are worth while. There are many things we can do ; they cause little labour, and they make all the difference to the aspect of the garden. If there is a long, straight path running almost the full length of the garden, exposing the whole of it to view at once, the scene loses interest if the garden is a small one, since nothing is left to the imagination ; there can be no anticipation of hidden beauties, no delight in coming suddenly on unsuspected corners ablaze with bloom.

Yet if a few arches are set up at intervals along the path, not only will its appearance be considerably improved, but we shall obtain peeps between the arches as we make a

mission, providing they lead somewhere, even if it be only to a garden seat set at a point of vantage which commands a pleasant view. Often it is a simple matter to turn a straight walk into a winding one, and, by planting flowering shrubs or erecting a trellis at the corner, to conceal effectually what lies beyond.

The View from the Garden. The view from the garden, when this is limited in extent, is of great importance. You may have a delightful show of flowers, the beds and borders full of glowing masses of colour, but if on looking round you see nothing but bricks and mortar, much of the charm of the scene is lost. It is usually possible, by

careful planting along the boundaries, to screen surroundings that are lacking in picturesqueness, to say the least of them. It is a mistake to shut them out by a thick wall of greenery such as is furnished by a row of Lombardy Poplars or Sycamore trees, for that seems to make the garden smaller than ever.

Cover the Fences with Fruits and Flowers. If, however, the fences are planted with fruit trees, rambling Roses, Clematis, Blackberry, or Loganberry, they in themselves are attractive, and, while veiling the ugly surroundings, they do not wholly shut them out. Glimpses between the leaves and flowers serve to carry the eye beyond, thus concealing the actual limits of the plot.

Gardens vary so much in size, shape, surroundings, locality, and existing features that it is difficult to generalise. There are certain types of garden for which only one method of treatment is open. For example, a garden in the heart of a smoky town with high walls and ugly buildings all round it needs a certain definite type of planning. A long, narrow garden or a very small garden needs quite different treatment. There are, however, some guiding rules which cannot be disregarded, whether the garden is large, small, in the heart of a town, in a suburb, or in the country.

A garden must be considered first of all as a whole. It is useless to concentrate on parts of it and then discover that there are too many parts and that the general effect is "spotty." If considered as a whole at the outset and divided up according to requirements and the space available, the result will be much

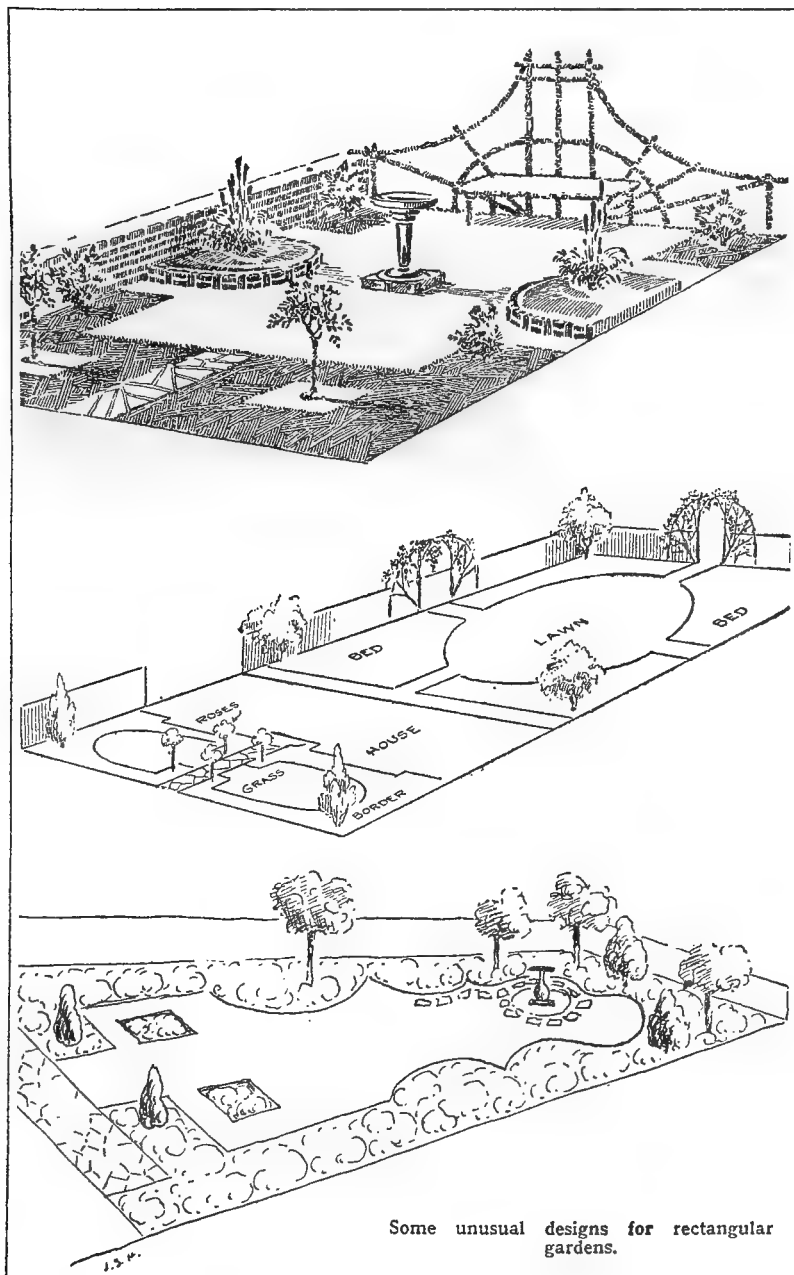
more satisfactory and an enormous amount of labour saved.

Nearest to the house do not have trellis work, arches, high trees, or anything that will cut off the view of the garden or that makes the house dark.

If the house is stone or of a whitish colour, crazy or rectangular or some form of stone paving is most suitable to use, while for a brick house a terrace or walk of brick of a similar colour is the most pleasing treatment. Next to the formal part of a garden the arrangement in most cases should be as wide a stretch as possible of lawn uninterrupted by small beds.

Don't Make Unnecessary Paths. Pathways should be limited to those that are absolutely essential. Before making them, consider whether they are really required. They are necessary from gates to front and back doors, and connecting the garage with the house. Often one sees a path right down the middle or all round a garden where there is probably little traffic; this looks ugly and takes up valuable space. Paths should be sensibly made and of a fairly good width. Where there is room, a path should be wide enough for at least two people to walk along comfortably; a minimum width of four feet is required.

If the surrounding views are unpleasant, these should be screened as far as possible by suitable trees and shrubs. If, again, there is a good view of hills or country, these should be considered and the garden planned so that the views are not spoilt. Much can be done to create or improve surroundings, by covering up fences with plants or bringing into use outside features



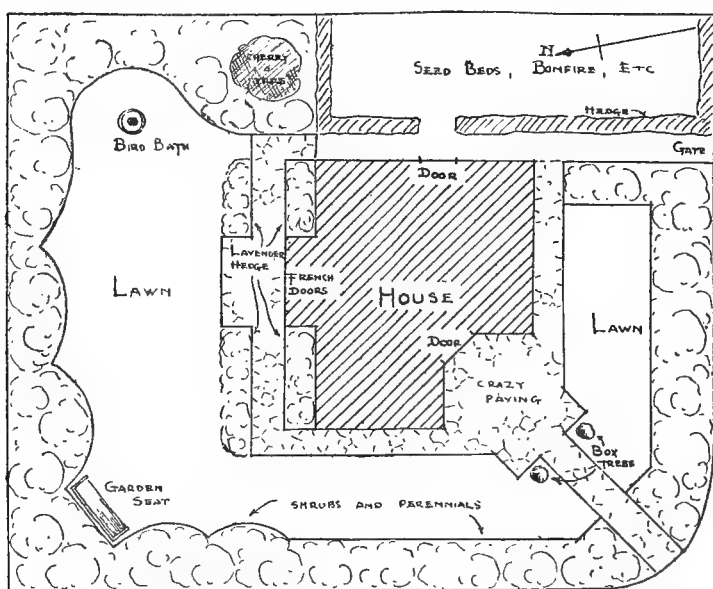
Some unusual designs for rectangular gardens.

that are interesting. The views from the main windows of the house should be as long as possible, terminating in some feature such as a garden seat or a figure. If it is a small garden, there should be some point of interest at the far end.

A kitchen garden should be hidden as much as possible from

in front that are suitable to the soil. If it is possible to whitewash the adjoining walls, fences, sheds, etc., this will not only make the garden brighter, but will show up the plants that are growing on them.

In some cases it may be difficult to grow a lawn satisfactorily if the



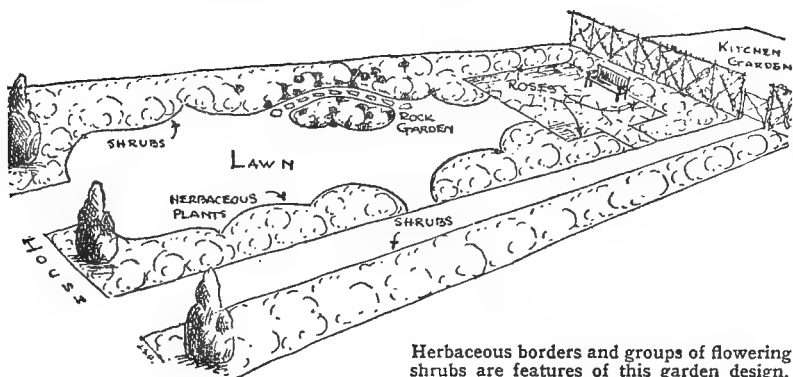
Design for a garden on a plot of ground of awkward shape.

the windows and lawn, but easily accessible from the kitchen door. Here one good path is necessary.

Laying Out Awkward Types of Gardens. Let us now consider a few of the awkward types of garden. First, there is the garden in a large town with ugly walls and buildings all round. Tall buildings cannot be hidden, but the adjoining walls and fences can be improved by growing Roses and evergreen climbing plants to hide them, with shrubs and other plants

soil is poor and wet. If this is so, it will often be much wiser to pave the space with crazy stones or bricks. A dull, odd corner between sheds or a path in front of a drain or manhole cover may be brightened by the use of a plant box or tub made to fit the space and filled with some cheerful-coloured plants.

The long, very narrow garden is another problem. One important point to remember is not to put a path down the middle: this will only make it appear even narrower



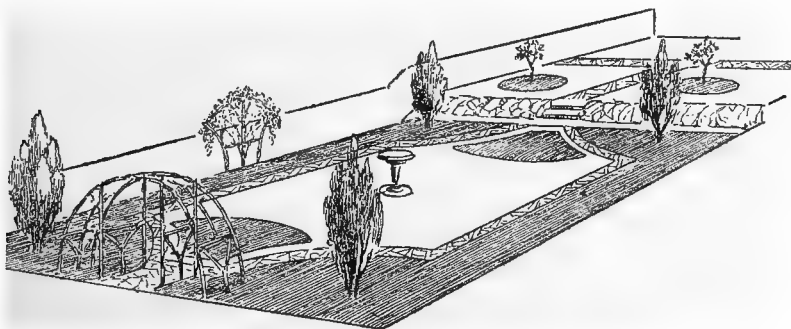
Herbaceous borders and groups of flowering shrubs are features of this garden design.

and will take up much room. A path will probably be necessary for a certain distance, and this will be best at one side. To make the garden appear wider, have one or two lines going the whole width, e.g., a paved walk outside the house, or one or two borders running across, say at the end of a piece of lawn.

The very small garden is often more difficult to plan than a large one, because it is hard to know what to leave out. You may wish to have a good assortment of plants, but it is far better to have a few features and to give each its proper space. For a small back garden a narrow border against the

boundary, and surrounding a small lawn, with, perhaps, a sundial or bird bath set on crazy paving in the centre, will be a pleasing, simple treatment, and far better than an attempted elaborate affair with useless pathways and beds of various shapes cut out of the lawn.

The larger garden presents more scope for ideas than the small one. The various parts, such as Rose garden, herbaceous walk, pool garden, pergola, Lavender garden, rock garden, tennis court, and topiary work, can be incorporated to make up a pleasing whole. Topiary work also can be used with good effect in small gardens. Clipped Box or Yew trees look well



Design for a formal garden.

at the corners of lawns, by an entrance gate, or in tubs by the front door, and give the garden extra dignity.

Garden ornaments, suitably placed, add charm and interest. A sundial, bird bath, dove-cote, bird table, seats, stone figures, and weather vanes can be used effectively. Here, again, do not have too many: one ornament well placed is better than six badly arranged ones.

Making a Small Garden Look Larger. It is now fairly usual to see new roads with their gardens separated by wire or chains, or even a plain border, instead of by brick walls. This presupposes a similarity of aims, and generally of class, in the people inhabiting them, but it certainly does lessen the "shut off" or "small villa" effect in such a street, and gives the whole neighbourhood an open, park-like, and well-kept appearance, besides allowing for better cultivation than brick walls or Privet or Laurel hedges. Where, however, seclusion is desired, one of the other and more difficult means must be adopted.

Obtaining an Effect of Distance. We will take the most awkward case of all—that of a conventional brick-walled rectangle some 120 feet by 60 feet. The first thing is to screen the boundaries. This can be done by shrouding the walls in creepers or climbers such as Roses, Virginian Creeper, Jessamine, or even Ivy on north walls, and screening them by flowering trees to break up the outline. A way to obtain the effect of distance is by the use of arches and pergolas, glimpses through which reveal a succession of views beyond.

Another plan is to place the taller plants at the end nearer the house and gradually decrease these in size. This gives the effect of the foreshortening produced by distance, and if there are overhangs of verdure and dark "holes" and recesses in the end mass the result is good.

Many years ago I noticed in such a garden a mist of blue Forget-me-nots, and since then have often been struck by the value of their colour to give an effect of depth.

It is a good plan to combine these ideas: clothe walls, create "blinds" to disguise the angular form of the garden, make vistas by means of pergolas, obtain perspective by making use of decreasing height, and, finally, place sky-blue flowers on the farther edges for "horizon."

Improving the Straight Garden. Houses standing in a row must inevitably have straight strips of garden, therefore there are hundreds of people trying to decorate them to the best advantage. Whether the strip be long or short, it is the most difficult type to make pretty, for part of the beauty of a garden lies in its shape. The winding paths, the shady nooks, the high and low ground are all beauty unadorned, and one has to make up for the lack of these as best one can.

The first thing to be aimed at is to break the hard line at frequent intervals. This can be done very effectively by means of woodwork. A pergola, half or three-quarters of the way round a small lawn, makes a good beginning. A pergola summer-house, over which creepers intertwine, is not only very pretty, but has a cosy look, and affords a

pleasant shelter when the sun is too hot.

Archways covered with rambler Roses break the straight line of the path; it adds to the height and also the privacy of a garden if a pergola is put up all the way down each side.

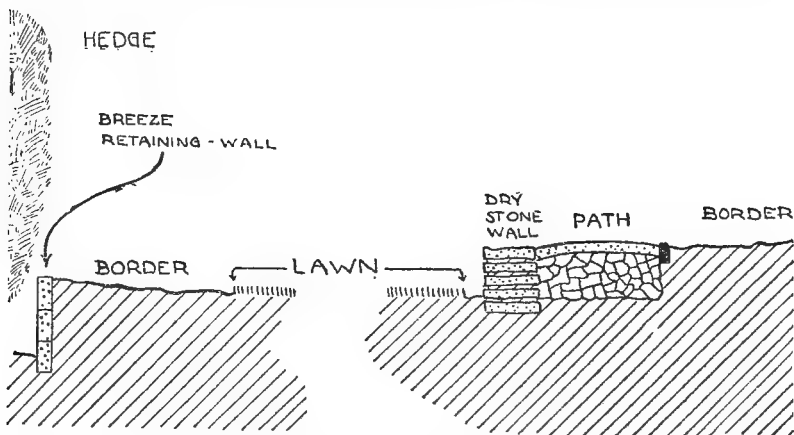
A good plan is to raise the lawn, so that a sloping bank or steps run down to the flower-beds. Another way of getting a broken effect is to grow both tall and short flowers in masses. Sweet Peas, Hollyhocks, Lupins, and Delphiniums tower delightfully over the low-growing but equally prolific Violas, Antirrhinums and Carnations. Apple trees are also very effective in straight gardens, so are Laburnums and Lilac bushes.

Very narrow paths running sideways between some of the flower-beds improve the appearance too, especially if they are covered with ashes, and well beaten down with a rammer.

If your Garden is on a Slope. Some are faced with the problem

of laying out a garden that slopes from side to side. The ground must be levelled, especially if, as is the case with so many gardens, a lawn is to be the main feature. Unless the difference in height between the two sides of the plot is very slight, it is a mistake to try to reduce the ground to a common level by digging out soil from the higher side and dumping it on the lower. This would leave the poorer subsoil exposed on the higher side, which would also be flanked by an abnormally high fence, and nothing could be expected to grow well under such conditions.

How to Make a Terrace. A better method is to terrace the ground. Terracing is really quite easy if the following method is adopted. First calculate the amount of drop from side to side of the plot. Assuming that the right-hand fence is 2 feet 4 inches higher than the left, a terrace along the right-hand side 10 inches high will leave 18 inches to be dealt with on the lower left-hand side. The terrace may con-



A section through the sloping garden showing how the terracing and levelling are carried out.

sist of no more than a herbaceous border flanked by a path held up by a dry stone wall, but it will be seen that this considerably reduces the area left to be levelled, as well as the depth of levelling to be carried out.

A retaining wall $1\frac{1}{2}$ feet high must be built along the lower side, and this is the first operation. It should be set 18 inches away from the fence, as this will leave space for a hedge of quick-growing trees, such as *Cupressus macrocarpa*. The trees should be clipped back when they are level with the top of the fence on the higher side of the garden. A cheap wall can be constructed of breeze slabs or, if these are not available, home-made cement slabs made by pouring cement into wooden trays 3 inches deep.

Next, peg a cord in line with the higher right-hand fence as far away from it as the combined widths of the border and the path are to be, plus one foot for the width of the dry stone wall. Four feet for the border and 3 feet for the path are suitable widths for a moderate-sized garden. The area between the cord and the retaining wall on the left-hand side is the site of the future lawn and left-hand flower border, and should now be dug over in the usual way. As the work proceeds transfer the top spit from the right-hand side of this area to the left, to bring the soil level with the top of the retaining wall. The effect of this will be temporarily to make the left-hand side higher than the right.

The right-hand herbaceous border is now marked off from the path, and the path is dug out to the depth of the top spit of good

soil. The soil thus obtained is thrown on to the lawn area to make good the top spit already removed from its right-hand side. The area between the cord and the retaining wall may be finally levelled and prepared for turfing and planting.

Building a Low Wall. A dry stone wall 10 inches high to retain the path is now built along the line of the cord. An attractive and cheap wall can be made of old York paving stone. A ton costs about £1, and is sufficient to build 60 feet of wall 10 inches high. The slabs of stone when hit with a hammer usually break into flat triangular pieces with sides 6 or 7 inches long. These pieces are laid flat with their longest sides facing the lawn to give as even and regular a surface as the material will permit. Stone can be economised by putting a layer of soil, in which creeping rock plants may be planted, between each stone course. A dab of cement here and there is all that is required to make the wall secure.

The general appearance of this dry stone wall is improved if its line is broken in one or two places by steps leading from the path to the lawn level.

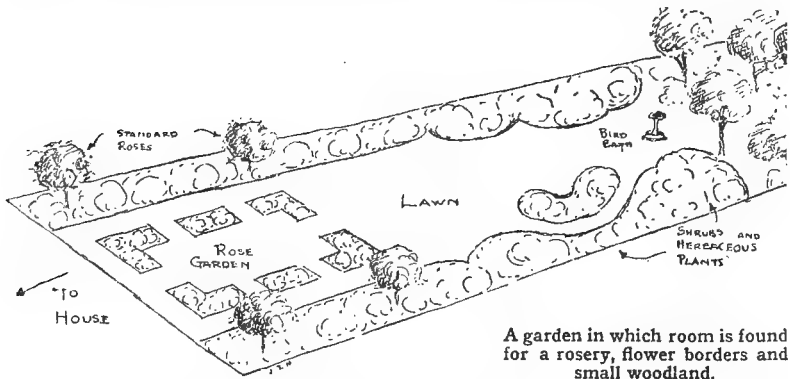
The space left for the path, from which the top spit has been removed, is now filled up with broken bricks and rubble to within 3 inches of the top of the wall, and the path is finished off level with the wall. If cement is used for the path, holes should be left at intervals close to the wall. When the cement has set, these holes can be filled with pockets of soil in which will grow rock plants, to break the severity of the straight line of the path.

The garden is now ready for the ordinary digging and planting. When the shrubs below the retaining wall on the left have grown higher than the fence, and the higher right-hand fence is hidden by tall flowers in the herbaceous border, there will be nothing left of the original drop but the mere 10 inches from path to lawn, in the form of the dry stone wall.

Looking through Door or Window. The vista seen through a

edging may be made with Grape Hyacinth, Scilla, or Crocus. Successional flowers are ensured by pulling up the Wallflowers in spring and planting Antirrhinums, Aster, Coltness Gem Dahlia, or Marigold, all of which will bloom over a long period if the seed pods are picked off. The bulbs may remain in position, and will flower again in later years.

A charming outlook through the front door is provided by laying a

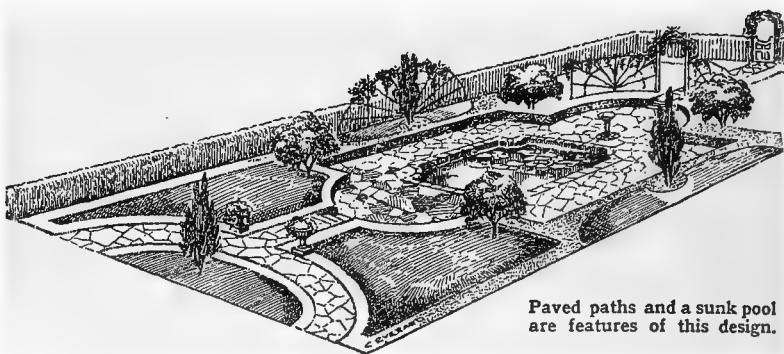


window or an open doorway has great possibilities. The semi-darkness of the interior of the house appears to intensify the colours of the flowers and grass, especially when the garden is bathed in sunshine; but very few appear to take advantage of the setting so provided.

There is no reason why even the short path from the front door to the gate should not be laid out attractively, by cutting a border alongside in which may be planted flowers which will bloom the season through. A commencement can be made by setting Wallflowers with bulbs as groundwork, such as Daffodil and Tulip, whilst a pretty

paved path leading to a garden ornament surrounded by a bed of flowers or a closely cut sward of grass. If one or two low brick steps can be introduced which lead up to the path, the effect will be still more charming, as these can be planted with rock plants, which will in time provide a floral carpet and give a contrasting note of colour against the bricks. A bird bath or sundial forms a suitable central ornament for the end of the path.

If there is room to erect a trellis round the door over which climbing Roses may be trained, some very pretty decorative effects can be obtained. Charming effects are



Paved paths and a sunk pool are features of this design.

produced by the Virginian Creeper when grown over treillage round a porch or doorway. The long leafy trails become beautifully autumn tinted.

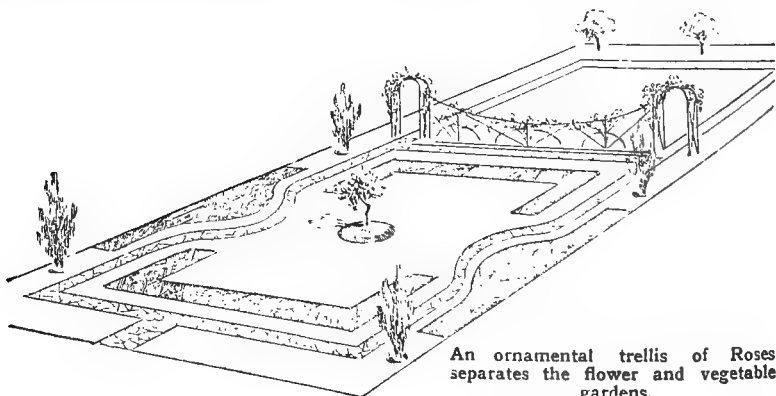
LAYING OUT A NEW GARDEN.

A task which many people have to undertake is the laying out of a new garden. They may be tackling a piece of ground that has never been cultivated before, and until a definite scheme has been decided upon it is unwise to start operations on any particular portion of the plot.

Whilst it is recommended that

everyone should embody his own ideas in the designs of a garden, there are certain fundamental principles of design which must be followed. If they are not, the result may still be moderately pleasing, but even to the uninitiated something will appear wrong. It may not be possible to translate the error into words, but the disappointment remains just the same.

One of the most important points to bear in mind when designing the small garden is to be governed to a large extent by the position of windows and doors in the house. Every portion of the formal garden visible from the house must cen-



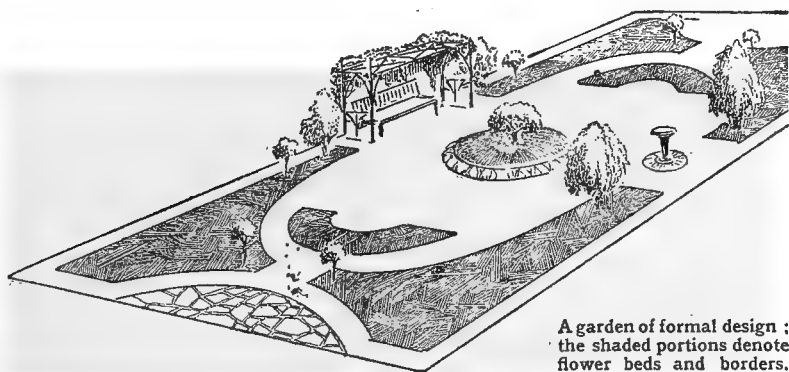
An ornamental trellis of Roses separates the flower and vegetable gardens.

tralise on an important window, and main paths should be square with the house, and where possible lead straight to a door or other entrance.

A paved path and steps make an admirable way to the front door. A path which does not lead to a door must centralise upon an important part of the house. Tub trees of formal shape add greatly to the picture, whilst a seat placed

low stone walls, which are easily constructed and not expensive. Dry stone walls should never be made perpendicular, as some provision must be made for the supply of water to plants between the stones, and it is also easier to make a slanting wall more secure.

Lawns, beds, and paved courts and walks in the formal garden must always be level, or nearly so; a slight fall is not perceptible, and



A garden of formal design ; the shaded portions denote flower beds and borders.

centrally with the path gives some excuse for the provision of an entrance to that particular part of the house.

Paths must always lead somewhere definite. If they lead to a dead end, an ornament of some kind must be provided, otherwise there is no reason for the path. Garden seats, sundials or bird baths are equally suitable, and always prove an attraction in any garden.

The best treatment for the area surrounding a house is to make a formal garden. Slopes in the formal garden should be avoided, and where the ground is not level a series of terraces and sunken gardens can be planned. An opportunity is thus provided for making

is sometimes an advantage for drainage purposes.

A plan ought to be prepared to ensure a certain orderliness in the design; the chief features, whether lawn, Rose garden, rockery, or herbaceous border, must be set in prominent and suitable positions. Even though it may not be possible to complete the work during the first year, the plan ought to be finished, except perhaps that minor details need to be filled in. If the garden is laid out in haphazard fashion, a flower-bed being made here and a border there, just as one happens to think of them, the design will lack coherence and distinction. If it is so prosaic as to consist merely of a series of beds and borders, all sense of repose

and charm of setting, on which the glamour of a garden depends, will be wanting.

Lime for Uncultivated Land.

Land which has lain uncultivated for generations is inert, though potentially of great fertility. The plant foods must be set free, and this is done most quickly by deep cultivation, which lets in the air and rain, and by applying lime at the rate of one bushel to three rods of ground, about 90 square yards. An application of lime will make an immense difference to the yield in flowers and vegetables the first season.

It is recommended that the turf be stripped off and stacked for twelve months, because that destructive pest the wireworm usually abounds near the surface of meadow land. The way to obtain "rich turfy loam," the gardener's ideal soil, is to build the stack with alternate layers of turf and fresh manure; the heat given off by the latter will destroy soil pests.

When the untutored gardener comes to consider the subject of hedge planting he is drawn inevitably to the ubiquitous Privet, because he knows of no other shrub which will serve his purpose so well. Yet the days of his emancipation draw near, for within recent years there has been introduced from China—the home of most of the new garden shrubs and flowers—an evergreen Honeysuckle, named *Lonicera nitida*, which makes an admirable hedge.

An Evergreen Honeysuckle Hedge. It is not valued for its flowers—in fact, it blooms rarely when planted as a hedge—but for its neat growth and small ever-

green leaves. It grows quickly, is easily increased from cuttings, bears clipping well, and may be kept low or allowed to reach a height of five to six feet. It is not an exclusive shrub, for it is as happy in suburban as in rural gardens. Privet will have to look to its laurels.

Shrubs and Plants for Light Soil.

If the soil in the new garden is light and sandy, choose the following for planting the beds and borders. Of shrubs there are Maple, Berberis, Ceanothus, Ornamental Cherry, Cytisus, Genista, Azalea, Heather, Cistus or Rock Rose, Helianthemum or Sun Rose, Syrian Mallow (*Hibiscus*), Lavender, Rosemary, Tree Lupin, Tamarisk, and Tea Rose. Of plants we may grow Carnation, Pink, Thrift, Thyme, Heuchera or Alum Root, Snapdragon, Anchusa or Alkanet, Aubrietia, Dictamnus or Burning Bush, Eryngium or Sea Holly, mauve Catmint, *Physalis* or Chinese Lantern, *Statice* or Sea Lavender.

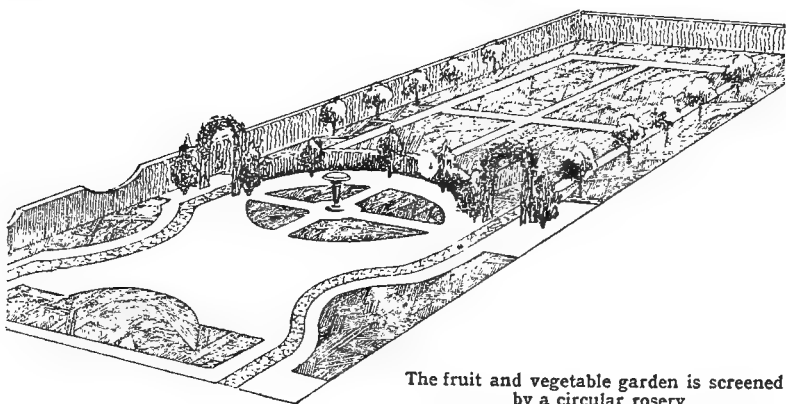
Shrubs and Plants for Heavy Soil. If the new garden is on clayey soil, choose, of shrubs, rambler Roses, bush or dwarf Roses of the Hybrid Tea group, the Golden Bell or Forsythia, Mock Orange or Philadelphus, Lilac, Hawthorn, Viburnum or Guelder Rose, Wistaria, Ornamental Crab, mauve and orange ball Buddleia, Weigela, Hamamelis or Wych Hazel, and Yucca. Indispensable flowering plants are Lupin, Delphinium, Pæony, Phlox, scarlet and yellow Geums, Bellflower, Purple Sage, crimson and bronze Helenium, Columbine, Lilies, Erigeron or Summer Starwort, Shasta Daisy, and *Sidalcea* or Grecian Mallow.

Plants for the Shady Border.

There need be no lack of colour in the shady border, for there are numerous suitable plants from which to make a choice. It will never glow so brightly as the border in a sunnier aspect, but that is an advantage, for the contrasts of light and shade, of sunshine and shadow, invest the garden with fresh and ever-changing beauty.

For the shady border one may choose from the *Trollius* or *Globe*

coarse and weedy, it is not necessary to lift it and sow grass seeds or lay fresh turf. A remarkable change can be effected in a few months by assiduous attention to the tasks of weeding, mowing, rolling, and watering, and by the use of worm-killer, lawn sand, and fertiliser. At all events, it is worth while trying these measures before undertaking the far more costly work of making a new lawn. If they fail, lawn grass seeds can be sown in August-Sep-



The fruit and vegetable garden is screened by a circular roserie.

Flower, Japanese Anemone, Fox-glove, Monkshood, the brightly coloured *Astilbes* (*Spiræas*), *Rudbeckia* or Cone-flower, *Tradescantia* or Blue Spiderwort, Double White Feverfew, and *Polemonium* or Jacob's Ladder. And room ought certainly to be found for some of those handsome hardy *Primulas*—the coloured *Primroses* of other lands. Chief among them are the *Florindae*, *Sikkimensis*, *Beesiana*, *Japonica*, and *Pulverulenta*.

The New Lawn. One hesitates to raise hopes that may remain unfulfilled, yet it can be said that unless the site chosen for the lawn is very uneven and the grass particularly

temper or in April, or fresh turf laid in the autumn.

A glorious garden can be made on almost any kind of land if one does not attempt impossible things and chooses only those trees and plants which are likely to flourish there. We whose gardens are on heavy soil cannot grow *Azalea*, *Heather*, *Birch*, and *Broom* to the same perfection as others whose gardens are in the country of sandy, peaty heaths; but it is a consoling reflection that our *Roses* flourish as theirs will never do, the lawn is less mossy and more velvety, and the herbaceous border plants are as Goliaths to their Davids. It is

heartbreaking to try to grow plants that are difficult in the conditions with which one has to deal, and needless to attempt it, for there are others equally beautiful which will grow more lustily and bloom more profusely there than elsewhere.

Garden Planning Do's and Don'ts. It is surprising how attractive and productive a small garden can be made, yielding an abundance of flowers as well as fruit and vegetables, if only its owner takes the trouble to plan it to the best advantage. So different in size and shape are most gardens that it is useless to lay down any plan as applicable to all, but certain mistakes must be avoided if the garden is to be a success.

Don't place choice fruit trees along a wall facing north and the hardier fruits along the wall which faces south.

Don't lay out the garden so that the vegetable plot runs right up to the house, whilst the lawn lies at the farther end.

Don't disfigure the lawn with numerous star-shaped, crescent-shaped, and other beds.

Don't attempt to carry out too elaborate a design, and before you commence make out a rough estimate of what you think the cost will be.

Avoid "fussiness" and too much masonry. A bird bath or sundial to be viewed from one point at a time is sufficient. Don't crowd in a small garden bird baths, sundials, vases, seats, etc. Use restraint.

Don't plan everything in pairs; let the design balance, but not necessarily match.

If a pergola is desired, let it lead to a definite object of interest—a summer-house or a seat.

Study the aspect—whether it is sunny or shady.

Don't cut up the design with too many paths, and don't let these meander aimlessly.

See that everything is strictly in proportion; proportion is the keynote to success.

Always set plants in the herbaceous border in groups of three at least, and in lines, curves, or drifts.

Don't plant in lines always parallel to the border edge; let them run in a slanting direction into the back of the border. Vary the direction of the slope.

Think ahead; recall the future growth of a plant, and place it accordingly.

Don't place all tall plants at the back of the border. Bring a few to the front, and thus vary the outline.

Use groups of *Nepeta* (Catmint), *Stachys*, and *Cerastium* (grey-foliaged plants) here and there. Buy plants from reliable nurseriesmen. Pay a fair price for herbaceous plants. Don't rely on your neighbours for your stocks.

If you attempt a colour scheme, keep strong yellows and reds in the middle of the border, and lead up to them with paler colours—pink, blue, and mauve.

A *Yucca* makes a good "full stop" to any border.

A background to a border is necessary; use shrubs or climbers on trellis.

New Ideas for Front Gardens. A garden measuring 25 feet by 10 feet, obscured from the morning sun by the house, and from the afternoon sun by the front fence, presents a problem not too easy to solve. It is a problem encountered in thousands

of suburban roads, and only too often it is solved by planting a hedge of *Euonymus* behind the fence, and a few Michaelmas Daisies under the window, the two being separated by a patch of grass. Yet it is quite possible to have blossom even in that little garden all the year round.

The Hedge. First let us consider the front hedge. Why not flowering shrubs instead of the clipped Privet or *Euonymus*? In a small garden, with, say, 15 feet between the two gates, it is possible to plant three or four flowering shrubs, and to arrange that each one flowers at a different time.

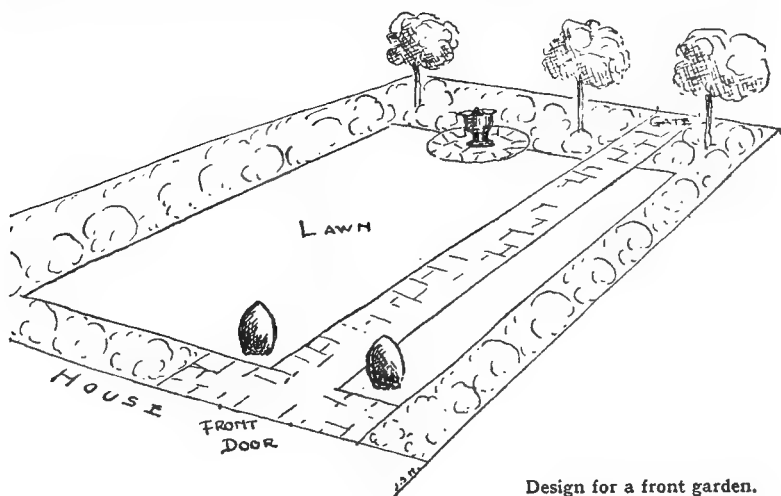
Suitable shrubs are Flowering Currant, which blooms in April, and is not at all particular in its requirements; *Berberis Darwinii*, which bears orange-coloured blossoms in May, berries in October, and is beautiful all the year; *Laurustinus*, which bears a wealth of white flowers in winter; and the white-flowered *Veronica*, which flowers in June. The beauty of this

small shrubbery is much enhanced if it is carpeted with white *Arabis*.

The central portion of the garden will never be satisfactory as a grass plot, for grass, to grow its best, must have air and sunshine. It is far less troublesome to pave it with small, irregular blocks of crazy paving, between which can be grown such small rock plants as the dwarf Stonecrops or Saxifrages. In summer *Alyssum* Little Dorrit and blue *Lobelia* can be grown from seed. Since this little paved court is not to be walked on, there can be no objection to this plan, which adds to the sense of size of the garden.

The path to the front door should always be straight, in so small a garden, and against the boundary wall or rail a small rockery can be planted. The best effect is obtained by keeping this to one plant, such as *Aubrietia*, which may, however, be in several shades of purple and mauve.

There now only remains the bed under the window. At the back of

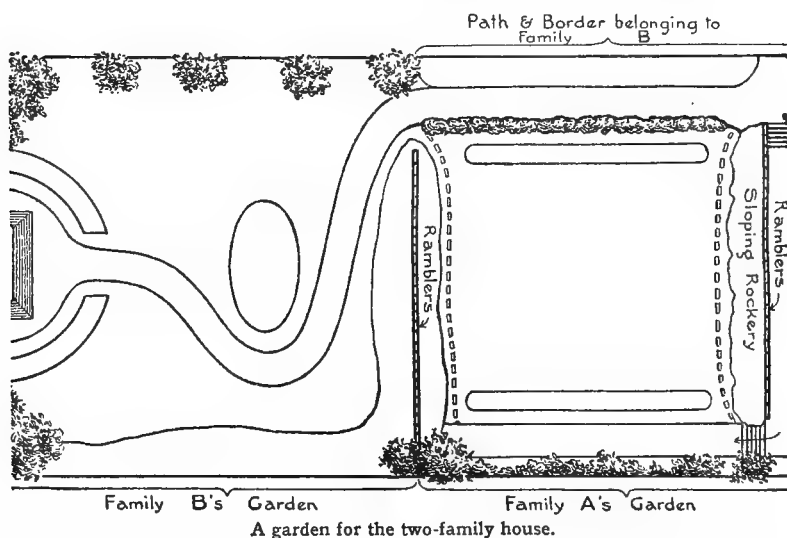


Design for a front garden.

this Winter Jasmine or Pyracantha may be planted, and trained against the wall. Either will give colour in late autumn and early winter.

We have now provided ourselves with blossom or berry for late spring, autumn, and winter, and have only early spring and midsummer to provide for. Fill the remaining bed with Daffodils and edge it

ingly frequent, but, unfortunately, little thought has been given to the arrangement of the two-family garden. All sorts of complications arise if two different families agree to share in haphazard fashion an ordinarily planned garden. Neither can quite secure that sense of privacy and isolation which is the main attraction of a garden. There



with Crocus and Chionodoxa, to brighten the dullness of February and March. When these have finished blooming, they must be lifted and their places filled with plants for summer blooming. Coltness Gem Dahlias, if well watered, will supply a profusion of flowers from July to October without demanding much sunshine.

With all these, it is possible every time we return to the house to be greeted by "something in flower."

A Garden for the Two-Family House. Of late years the "two-family" house has become increas-

can be no real privacy without enclosure.

In order that the garden which is to be shared shall bring real joy and appreciation to both parties, it should be divided as nearly as possible into equal divisions, by means of rustic fencing covered with Roses or of flowering shrubs, whereby a sense of seclusion can be obtained without loss of harmony and unity in the garden as a whole.

Cleverly designed pathways and screens of lovely plants and bushes must allow each family to have a separate entrance to its own portion

of the garden. It must be possible always to spend a quiet afternoon in the garden or to entertain friends without fear that one's neighbours are being disturbed or inconvenienced in any way.

The sketch illustrates one way of solving the problem in a typical suburban plot. The idea is that rustic arches hung with climbing Roses shut off Family A's garden from Family B's, without destroying the impression of wholeness in the main garden.

The ramblers along the terrace, above the rockery, complete the sense of balance in Family A's garden, while the shrubs along the pathway allow Family B to reach their portion of the garden without intruding on Family A's preserves. At the same time, too, these attractive barriers provide the elements of mystery and surprise which add to the value of a garden.

When friends come to tea, Family A (living on the ground floor) can entertain them on their terrace, immediately in front of their open French windows. Family B (living on the first floor and using the front or side door of the house) can take their friends down to the summer-house at the bottom of the garden, where they keep their crockery and deck-chairs, and give their parties without fear of being overlooked.

The plan is capable of modification to suit particular circumstances. If the main garden is a very small one, it may be better, instead of dividing it into two equal parts, to have one fairly large part planned to suit Family A; then Family B must be content with one small patch of lawn and a summer-house beside it, where there is just room for a family party to sit in the

sun. This, however, must be a matter for arrangement.

How to Make Garden Models.

Models of gardens are fascinating and useful alike; they enable one to visualise methods whereby the actual garden can be constructed or improved. Among other things, colour schemes for flower borders may be planned many months in advance with remarkable results.

Suppose that a model of a proposed garden of small dimensions is to be made. To begin with, the entire piece of land is measured up and a plan is drawn, showing the boundaries of the garden and the position of the house. Taking, for example, the whole ground area to be in the shape of a rectangle measuring 100 feet by 30 feet, the scale used would probably be $\frac{1}{4}$ inch to one foot. Having drawn the outline of the garden, the proposed design is then drafted in the plan.

It is essential that the measurements in the plan be accurate, otherwise the model will be out of proportion. The design completed, another plan is drawn or traced. Selecting a flat piece of wood, preferably deal or thick plywood, 2 feet 2 inches by 8 inches, one of the plans is pasted on it. Working by sections, the entire design, with the exception of the plan of the house, is covered with plasticine, enabling different levels or slopes to be worked out.

The house is modelled out of cardboard, or, alternatively, the plan of the building can simply be left in outline. The latter method, however, takes away much of the realistic effect of the finished model. Fences, walls and steps are also made out of cardboard. Hedges are

fashioned with thin textured felt, which can be cut to the required thickness and height.

To make flowers and shrubs, cut lengths of fine wire, lightly glueing on tiny pieces of paper cut to the shape, or approximate shape, of the bloom and foliage, then paint these the required colours. The wire stems are inserted in the plasticine beds, creating a strikingly natural effect.

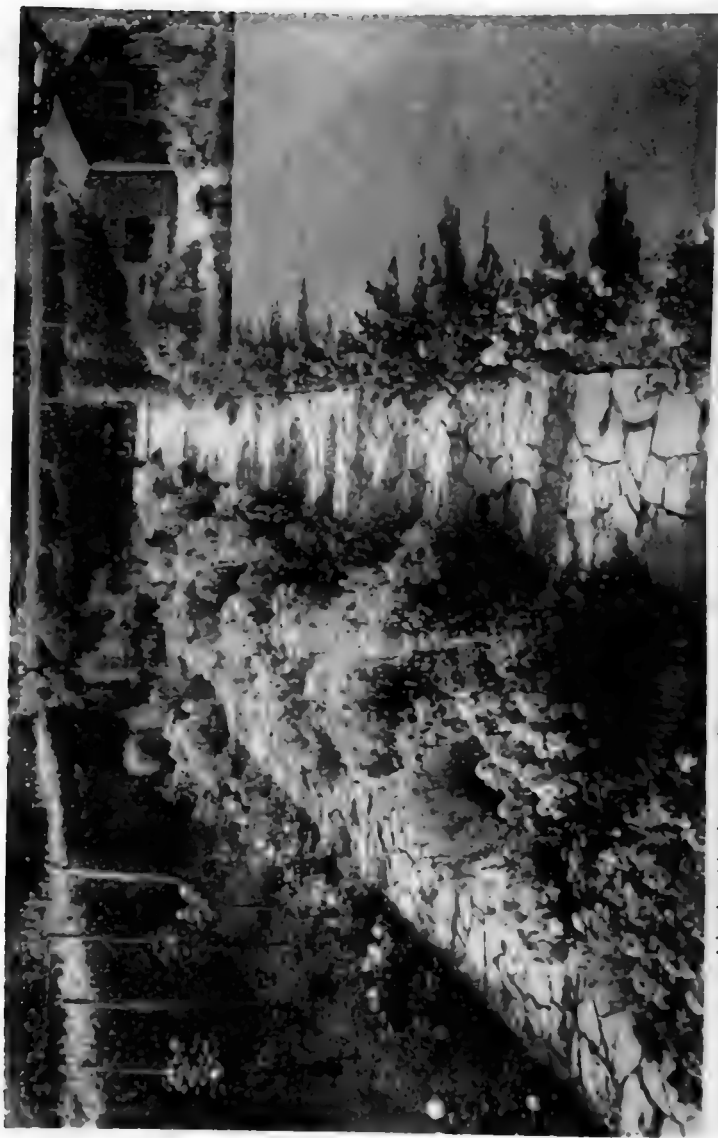
Another method, and equally effective, is by using different coloured silk threads and massing

tiny pieces on high-banked beds of plasticine. However, beautiful scale models of trees and shrubs can be obtained at nearly any toyshop.

Grass is made, either by glueing down thick green-coloured paper cut to the shape of the lawn or lawns, or by sprinkling sawdust on the required places and then painting it green. Pools are made with pieces of silver paper or mica, cut to the desired shape. The entire cost of the completed model is exceptionally cheap.



A garden vista—looking down a path between borders of fragrant Stocks and standard Roses.



A border of hardy summer-flowering perennials set between flagged paths by the side of a lawn.



The King's Spear or Giant Asphodel, *Eremurus himalaicus*, it grows 6 feet high and has immense stems bearing white flowers in early summer.



Many dwarf flowering plants can be grown in the crevices of a paved path, e.g., Pink Acaena, Alyssum, Mentha, Thyme, and Armeria.

CHAPTER 3

Secrets of Successful Gardening

UNLESS the soil is thoroughly prepared by digging and manuring, it is impossible to produce first-class crops. When the ground is dug over annually to a spade depth a hard "pan" is formed beneath, through which the plants' roots are unable to penetrate. The result is that they remain near the surface, and in consequence suffer through lack of moisture in dry weather.

During winter, when a considerable part of the garden is vacant and new beds and borders are being planned and planted, is the best time to prepare the ground thoroughly.

The best method to adopt with heavy clay soil is to ridge it and, at the same time, work in liberal quantities of strawy manure, half-decayed leaves, or garden refuse. The object of ridging is to expose the maximum amount of soil surface to the influence of frost, snow and air, whilst the half-decayed manure, etc., will keep the soil open during the process of decay and eventually help to lighten and enrich it when decomposition is complete.

Ridging the Soil. Ridging is done by first dividing the plot into 3-foot strips, and each strip is treated separately. A trench 2 feet wide and 12 inches deep is taken

out across the end of the first strip, the soil from which is wheeled to the end of the plot. The bottom of this trench is then loosened and manured, and the soil from the next trench is placed in a heap in the centre of the first. This process is repeated right down the strip and a ridge is thus formed. When all strips of ground are completed, a series of ridges is made all over the plot. The valleys between these ridges carry away the surplus water.

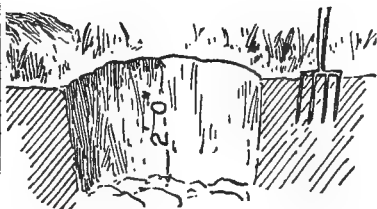
In spring the ground should be dusted liberally with lime, and this, in combination with the exposure to atmospheric conditions, will render the soil very friable, so that when dry enough it can be levelled and raked to a fine tilth.

Double-digging. Normal, well-drained soil is brought into a fertile state most easily by double-digging. During the process, manure is added according to the texture of the soil. Light sandy ground requires the addition of cow or farmyard manure: failing these, well decayed leaf-mould or garden refuse. These materials will bind the particles together and help the soil to retain moisture as well as supplying additional food. Heavy ground, on the other hand, needs lightening by incorporating strawy

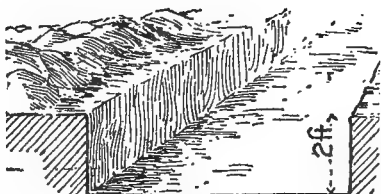
horse manure or partially-decayed leaves or garden refuse.

Double-digging is carried out by excavating a trench two spits (about 20 inches) deep and 2 feet

wide at one end of the plot, and placing the soil alongside the opposite end of the plot. The bottom of the open trench is forked over, the top layer of soil from the next



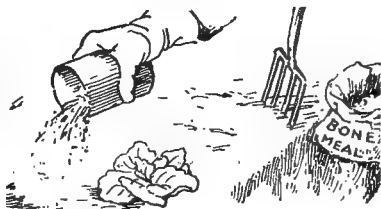
The correct way to prepare the site for a tree or shrub.



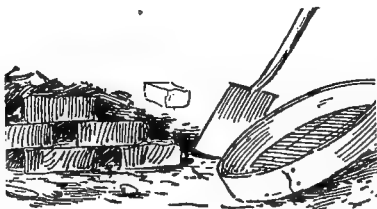
How the ground should be prepared for planting a hedge.



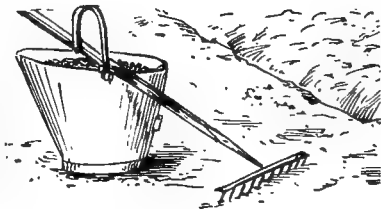
Digging the ground one spit deep, the most usual method of cultivation.



Bonemeal, an excellent fertiliser, should be scattered on the soil and forked in.

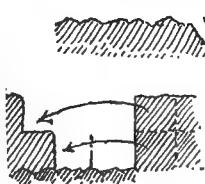


Ashes from the garden bonfire, wood ashes they are called, should be added when digging.

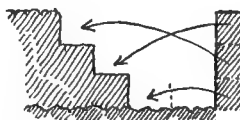


Finely sifted coal ashes are useful for mixing with clay soil; they help to drain it.

When trenching newly-cultivated land the layers of soil should be kept in the same respective positions.



If the positions of the layers of soil were reversed the infertile subsoil would be brought to the surface.



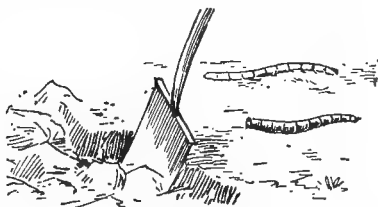
strip of ground is turned in, and the second layer is put on top of that: thus the first trench is filled and the second one is emptied. The work is continued in this way until the end of the plot is reached, when the soil taken out of the first trench is used to fill the last one. This method is suitable only for carrying out on land which has been cultivated for some years.

How to Prepare New Ground. A different practice must be followed in dealing with fresh ground. If it is meadow land, the turf should be stripped off and stacked for a year. The first trench is then dug out and the top layer of soil from the second strip of ground is also taken off. All the excavated soil is placed at the opposite end of the plot. The next procedure is to fork over the bottom of the first trench. The second layer of soil from the second strip of ground is then turned into the first trench and the upper layer of soil from the third strip of ground is put on it. Thus the first trench is full, the second trench is empty, and the layers of soil remain in the same respective positions.

How to Level the Ground. When levelling a site for a lawn or other purposes of cultivation, it is not sufficient to remove the top soil from the highest parts and spread it in the hollows. By doing this one end of the plot is deprived of all the good top soil and the other end receives a double quantity. The result is that the plants grow vigorously at one end and stunted at the other.

Using Straight-edge and Spirit-level. The level must first be found with a straight-edge and spirit-level, and indicated by pegs driven into

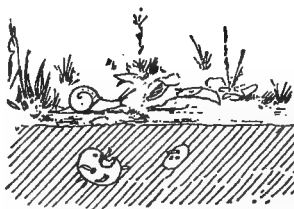
the ground. Start by driving in a peg at the highest end; the top of this peg should be level with the surface of the soil. Then drive in another peg near enough to the first one so that a straight-edge can be laid across the two; test with the spirit-level and raise or lower the second to correspond with the first peg. Proceed in this manner across the plot in a straight line, fixing pegs at intervals approximating to the length of the straight-edge and arranging them so that the tops are level. Where the ground is undulating, some of the



One of the benefits of digging is that it helps to get rid of wireworms and other soil pests.

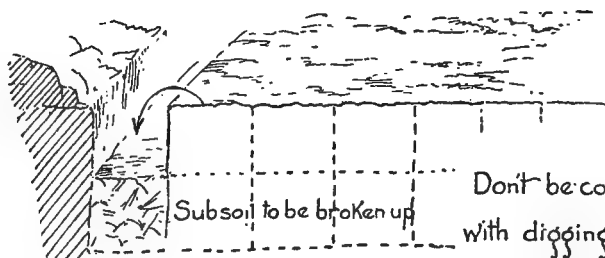
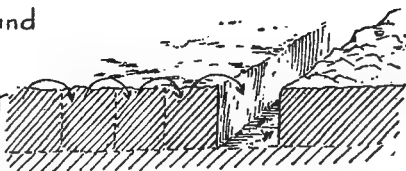
pegs will be well above the surface; in other cases some of the soil must be removed to enable the straight-edge to be laid across them.

Having fixed the pegs, measure down from the top of each one, add the measurements together, and divide the total by the number of pegs. The answer will be the number of inches to be measured downwards from the top of each of the pegs, and this can be indicated by a chalk line. The lines on the pegs can then be taken as the general level of the soil. To have an equal amount of top-spit soil over the whole area, first remove it and place it on one side, then level over the subsoil roughly and return the top spit so that it is level with the marks on the pegs.



Weeds should not encumber the ground during Winter or it may become infested with pests of all kinds

Digging the ground one spit deep is generally insufficient



Don't be content with digging less than 2 spits deep

if time can possibly be found

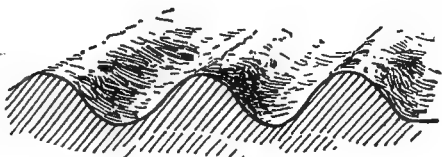
Another Way of Levelling.

Where a large area of ground requires levelling it is rather a tedious process with a straight-edge. In this case "boning" rods enable the work to be done much more quickly. A set of these consists of three T-pieces of wood, with 5-foot stems and 12-inch crosspieces. Commence as before by fixing one peg level with the soil at the highest

end of the plot, and levelling across to a second peg with the straight-edge and spirit-level.

Three persons are required when boning rods are used. One stands at the far end of the plot, and stands his T-piece on a peg which has been driven in approximately level with the first two. Another rests the base of his on peg No. 2, and a third person rests his on the

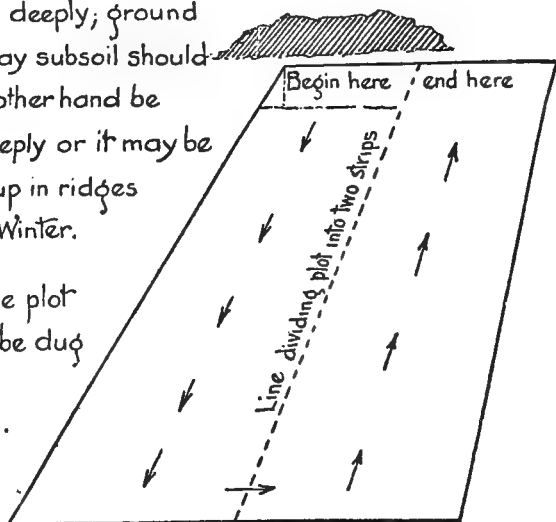
Don't dig
without keeping
a trench



Ground with a
chalk subsoil
should not be

dug too deeply; ground
with a clay subsoil should
on the other hand be
dug deeply or it may be
thrown up in ridges
for the winter.

A large plot
should be dug
on this
system.



first peg. The third man does the sighting: places his eye level with the top of the crosspiece of his rod and by looking across the top of

No. 2 peg is able to direct the first man to raise or lower his peg, as may be found necessary, until it is level with the first two.

CHAPTER 4

Hedge and Shelter Shrubs

BEFORE deciding on the kind of shrub or plant you require to make a hedge, it is necessary to take several important points into consideration. The soil and aspect must be considered as well as the purpose which the hedge is intended to fulfil—a boundary or a screen. From the following a selection can be made to suit all purposes.

Lawson's Cypress (*Cupressus Lawsoniana*) makes a very ornamental hedge and grows fairly rapidly, attaining 12 feet in height in about ten years. It thrives in almost any position, but will not succeed in waterlogged or very sandy soil. A compact hedge, which will act as a screen and a windbreak, can be formed in a few years.

Cupressus macrocarpa is much quicker growing, and on that account is more popular, especially for new gardens. More frequent clipping is required, however, to keep it neat and compact. For exposed positions it is not recommended as it is liable to die off at the base and become unsightly. Plants grown in pots should be purchased.

Evergreen Honeysuckle (*Lonicera nitida*) forms a neat hedge about 4 feet in height. The small Box-like leaves are produced on

slender, wiry shoots. It can readily be trained to any desired shape. It does well in all soils and in all but very exposed positions. When planting cut each plant down to within 6 inches of the ground or the hedge will become bare at the base.

The oval-leaved Privet (*Ligustrum ovalifolium*) is an invaluable hedge plant. It thrives in all positions and soil and is quick growing. Owing to the vigorous and wide-spreading root system it impoverishes the soil within several feet of the hedge, so that it is impossible to grow other plants near to it. The only way to get over this difficulty is to sink sheets of galvanized iron in the ground, in an upright position, within a foot of the hedge, or dig out a trench 3 feet deep and construct a concrete wall about 4 inches wide.

Laurel (*Prunus Laurocerasus*) makes an effective hedge but entails a lot of labour, as each shoot has to be trimmed back with a knife or secateurs. Shears mutilate the leaves.

Holly and Yew have few rivals as hedge shrubs. Although growth is rather slow to begin with, quite good hedges can be obtained in five years, beginning with small plants. Both form dense and attractive hedges up to 10 or 12 feet, often more, in height. In and near

smoky towns Holly thrives better than Yew, but in the pure air of the country districts the latter stands close and constant clipping even better than Holly.

Common Box forms a close, compact hedge from 3 feet up to about 5 feet or rather more in height; it is slow growing.

Variegated Euonymus. The variegated form of the Japanese *Euonymus (japonicus aureus)* is a most attractive shrub in winter, when colour in the garden is scarce. This plant grows about 5 feet high and forms a dense compact shrub covered with glossy green leaves which have wide golden margins. As it is derived from the original green form, it has a tendency to lose its variegation, but as this transition is gradual it is possible to check it by cutting out the green shoots as they appear. The development of these can be retarded or prevented also by growing the plants in rather poor soil.

This *Euonymus* forms an attractive hedge for dividing one portion of the garden from the other, and by inserting cuttings sufficient plants for a hedge can be quickly formed.

It is especially well suited to planting in seaside gardens; in inland gardens it is sometimes badly infested by the caterpillars of the magpie moth.

Beech and Hornbeam make admirable hedges, and the leaves, particularly of Beech, remain on the trees until spring: they turn golden brown in autumn.

Quick or Thorn makes an impenetrable hedge and is one of the best of all boundary hedges.

A mixture of Hawthorn and Beech forms, perhaps, the thickest

hedge; if cut each year it will last a long time and is not likely to go thin at the base. In most localities Hornbeam grows quickly and lasts indefinitely.

For a boundary hedge there are no better subjects than Hawthorn, Beech, and Hornbeam. These, if planted when young, and afterwards properly trimmed, will form a hedge that is practically impassable. The Myrobalan or Cherry Plum (*Prunus cerasifera*) is used also with good effect. This plant forms a dense growth and is very attractive when in flower.

Best Shrubs for Shelter. For the provision of shelter, Hornbeam and Yew are recommended. Although deciduous, the Hornbeam bears many of its old leaves until these are pushed off by the new foliage in spring. Thus an almost perfect windscreen is provided.

Probably the quickest shelter hedge is secured with Lombardy Poplars. These can be headed off when they have reached the required height and will rapidly give a large measure of protection against rough winds. In very exposed situations it is often worth while planting Poplars to provide temporary shelter whilst the hedge is growing.

The Austrian Pine is a splendid evergreen shelter tree, but is slow growing.

How and When to Plant. In view of the fact that a hedge is permanent, the ground should be trenched to a depth of 18 to 24 inches, adding loamy soil if the ground is poor, and incorporating decayed manure below the roots. Extra large plants of Holly and Yew are best planted in late September and early October, or at

the end of April and early in May. As a rule, small plants for hedges with plenty of fibrous roots with soil attached can be planted when the weather is mild and the ground in a suitable condition, from October to April. It is largely a matter of convenience, for when planning and planting a garden, hedges are one of the first considerations.

It is a good plan, in the case of a boundary hedge, to raise the planting site a foot or so and dig a ditch on the outer side. Plant, if possible, in double rows and arrange matters so that the plants in one row alternate with those in the other. If a single row is planted, set them out a foot apart. In the case of a boundary hedge a wooden paling or a light strained wire fence may be needed for three or four years.

If a double row is planted the lines of the row should be about 15 inches apart, the shrubs 12 to 15 inches from each other in the row : those in one row should be set so that they are not opposite those in the other row. A double row of shrubs provides a really good hedge, but a single row will do. Vigorous evergreen hedge shrubs, e.g. the Monterey Cypress, Lawson's Cypress and Arbor Vitæ, ought to be set at $2\frac{1}{2}$ feet apart. The hedge shrubs must be thoroughly watered as soon as planting is finished, and if dry weather sets in they must be kept moist at the root.

When to Clip Hedges. A well-kept hedge adds greatly to the charm of a garden. The best time to clip hedges is from April to August. It is usual to see a farmer cutting Thorn or Quick, Beech and Hornbeam hedges in winter, but

this is largely a matter of convenience, because there is then less urgent work to do on the farm. Early August is the best time to clip all three of these hedges. They then make short new shoots which remain attractive throughout the winter.

In their haste to obtain a screen in the shortest possible time amateurs often allow bushes to reach the desired height before clipping them. This practice is, of course, wrong and one which it is difficult or even impossible to rectify later. Nothing looks worse than a hedge that is "thin" or bare at the base. A good hedge is gradually built from the bottom upwards by careful clipping from time to time as the shrubs increase in height from year to year. It is difficult, if not impossible, to make a hedge increase in thickness from the top downwards.

A hedge should be slightly narrower at the top than the bottom, not only for the sake of appearance, but a wide-topped hedge shades the lower part and may adversely affect its growth. After they have been clipped frequently for a number of years hedges of some kinds of shrub become too wide or too tall for the position, despite close attention ; Privet is an example. This difficulty is overcome by clipping or cutting into the older wood in April or early in May every two or three years.

Young hedges should be clipped twice a year, in May or June, and in August. It is necessary to use the shears at least three or four times during the season on Privet hedges. This work should be done whenever a hedge begins to look

straggling and unkempt between May and August. Topiary work must be clipped several times during the summer, to secure and maintain a formal and close appearance of the specimens.

Although shears are the best tool to use to clip most hedges, when time permits or the hedges are small, the use of secateurs is strongly recommended for the Common Laurel, Bay and even Holly.

Pruning Overgrown Hedges.

When drastic pruning of an overgrown Privet or Thorn hedge is decided upon, let this be done early in March. Evergreen hedges which have outgrown their positions, or become leggy, should be cut hard back at the end of April or early in May. This advice applies to Laurel, Pyracantha, Holly, Yew, Box, Lavender, and Rosemary.

As *Cupressus macrocarpa* of any size transplants rather badly, start with small plants 1 to 2 feet high, preferably in pots. It is better also to grow *Pyracantha Lalandei* in pots until large enough to plant in the permanent positions. The best variety of Box for hedges is the upright-growing *Buxus sempervirens Handsworthensis*.

Novel Garden Hedges. Those who have just acquired new gardens will find many plants to choose from, all of which will provide useful hedges. Privet is cheap, grows quickly, and can be trimmed into any shape, but it seriously exhausts the soil for some distance round about. There are other plants with the advantages of Privet which are decidedly more beautiful and will add a note of distinction to the garden.

An excellent hedge is formed by *Cotoneaster Simonsi*. It does not

take long to grow, it forms a thick hedge, and for the greater part of the year is covered with neat, thick green leaves, whilst in autumn it is thickly clothed with bright scarlet berries. Hedges of this need no particular care; they are easily trimmed, and always attract attention in autumn and winter.

If you are prepared to take a little trouble the first season, a magnificent hedge can be made with *Escallonia macrantha*. This does particularly well near the sea. It has thick evergreen leaves, glossy and aromatic, while it is particularly beautiful when in bloom, covered with sprays of pink wax-looking flowers. The plants must be staked lightly at first, and the long shoots tied in for the first year or two, to build up the framework of the hedge.

Laurustinus as a Hedge Shrub.

Another flowering hedge of great beauty can be obtained from *Laurustinus*. Many grow it as a shrub, but few seem to know it as a hedge. Anyone who has seen a hedge of it in full bloom in winter will not forget. All flowering hedges should be pruned after flowering, so as not to interfere with the blossom the following season.

When hedges are required only to divide one part of the garden from another, Lavender is effective, but it must be cut well back, as it soon becomes straggling at the base.

Fuchsia Hedges. Fuchsia should not be overlooked by those who are fortunate enough to live where Fuchsias stand the winter. The plants lose their leaves in winter, but are quickly covered with a mass of green in spring. A Fuchsia hedge in full bloom is one of the

sights of summer and autumn. The hardy *Fuchsia Riccartoni*, with red and purple flowers, is best for this purpose.

Berberis stenophylla is ideal as a boundary hedge or to divide one part of the garden from the other. It has narrow evergreen leaves and produces long sprays of yellow flowers in early summer. Pruning must be done immediately the flowers have faded. *Berberis Darwinii* forms an equally beautiful hedge, but is more compact in growth.

Another shrub suitable for an ornamental hedge is *Tamarix pentandra*, which is particularly suitable for seaside gardens. It bears graceful plumes of pink flowers in summer.

Grow a Hedge from Seed. One of the quickest-growing Conifers is *Cupressus macrocarpa* (or Monterey Cypress), and when established it easily makes 4 feet of growth in a single season. It makes an excellent hedge or an attractive tree, growing to a height of 50 feet, and is very suitable to plant where quick growth is desired to form a screen. Where time is to be considered it is best to purchase small trees in pots, planting in well-manured ground during April and May, or again in late autumn.

If the grower is prepared to wait a few years it is cheaper to grow one's own trees from seeds, which readily germinate in a greenhouse or cold frame and produce trees large enough to plant into permanent positions at the end of the season. Sowings are made in seed pans filled with a porous potting compost, these being placed in a sunny cold frame in spring. After spacing out the seeds evenly over

the surface of the pan, they should be covered with $\frac{1}{8}$ inch of the compost and soaked with water before being put in the frame, which should be kept close until germination takes place.

The seeds germinate in about two weeks. They are grown in the pans until about 1 inch in height, when they are ready for potting into 3-inch pots. Each seedling should have a separate pot, for the plants strongly resent root disturbance. The pots must be well drained and filled with a very porous compost, made firm round the roots.

The potted seedlings are returned to the frame, which is kept close until the roots have taken hold of the soil, when air may gradually be admitted. Here they remain until the pots become full of roots, when they are again moved into larger pots. If the required number of pots is not available, the seedlings may be planted in reserve rows, putting the plants 9 inches apart in the rows, which should be 1 foot apart. Potted plants are best plunged in ashes and kept moist throughout the summer. The bed of ashes must be in a sunny situation.

If the positions for a hedge, or specimen trees, have been manured, the seedlings may be planted in late autumn from the pots, taking care to make the plants firm during the winter, after periods of frosts. Seedlings which were placed in reserve rows are best planted in permanent situations during the following April and May.

When ready to plant out, the seedlings will be about 12 inches high and will grow rapidly, making a thick hedge in a few years if

planted 2 feet apart in the row. Rapid growth is obtained only when the soil has been enriched by a good dressing of well-decayed manure, incorporated with the soil a few weeks before planting.

Roses for Hedges and Screens. The initial expenditure of a few shillings on Roses of suitable types will result in a hedge as impenetrable as Privet, equally fast-growing, immeasurably more decorative, and free from the all-pervading root system of the latter.



If Roses or other shrubs arrive in frosty weather they should not be unpacked, but partly buried in the soil.

Rambler Roses. Roses may be divided into two main classes—those suitable for boundary hedges and those adapted for the lower internal hedges. The former should consist of rampant varieties capable of attaining a height of, say, 8 feet, and the Wichuraianas and their hybrids, together with the Hybrid Sweet Briars, are ideal for this purpose. Some of the best varieties recommended in the first-named section are Alberic Barbier, cream-white, with lemon buds ; Albertine, vermilion buds, opening to coppery salmon-pink ; American Pillar, single pink blooms with white centre ; Dorothy Perkins, rose-pink ; Emily Gray, buff-yellow ; Excelsa, crimson ; François Juranville, rose-pink and orange ; Jersey Beauty, cream-yellow, single flowers ; Lady

Godiva, flesh-pink ; Sanders White and Snowflake, white.

The Hybrid Sweet Briars produce single or semi-double flowers, and one of their attractions is the foliage, which is deliciously scented, especially after a shower of rain. Amy Robsart, rose ; Flora McIvor, white tinted with rose ; Jeannie Deans, crimson-scarlet ; Lady Penzance, copper ; Lord Penzance, fawn ; and Meg Merrilees, crimson, are an easily-managed half-dozen.

Rose Hedges 6 feet high. Hedges of the second type, referred to above, are easily obtained, to any desired height up to 6 feet. The Rugosas, containing such invaluable varieties as Conrad Ferdinand Meyer, pale rose-pink, Blanc Double de Coubert, white, and Atropurpurea, crimson-maroon, single blooms, are splendid for a rather tall hedge. The Rugosas are best when allowed plenty of space, so that in a small garden they are more appropriate as boundary hedges. The two first-named varieties are exquisitely perfumed, whilst the singles produce handsome hips after flowering.

The Thornless Rose. The Roses par excellence for hedges 3 to 4 feet in height are the Hybrid Bourbon, Zéphirine Drouhin, deep pink, and its paler "sport," Kathleen Harrop. Sweet-scented blooms, thornless stems, attractive and abundant reddish foliage, continuous flowering and absolute hardiness are characteristics of these varieties. They are also exceptionally fine in autumn.

The Hybrid Musks include Roses of varying vigour, many of which excel for moderate or semi-dwarf hedges. Pax, white tinted with

lemon; Prosperity, white tinted with pink; and Moonlight, lemon-white, are useful for a hedge of $3\frac{1}{2}$ feet, whilst Cornelia, old rose and gold; Penelope, shell-pink tinged with salmon; and Vanity, bright rose pin^{ch}, single blooms, are slightly more dwarf in habit.

Many of the extra-vigorous Hybrid Perpetuals and Hybrid Teas make satisfactory hedges of moderate height and density. Hugh Dickson and Grüss an Teplitz among the crimsons, Frau Karl Druschki, white, and the single Roses, Isobel and Irish Elegance, in shades of pink, produce far more blooms when grown in this way than when used in formal beds.

Some of the pillar Roses and less rampant climbers are equally effective in hedges, especially Lady Waterlow, salmon-pink edged with carmine; Phyllis Bide, golden-yellow edged with carmine-pink; Thelma, coral-pink; Mary Wallace, large rose-pink flowers, very shapely in the bud; and Chaplin's Pink Climber.

For Low Rose Hedges. The inter-crossing of the dwarf Polyanthas and Hybrid Teas has resulted in the evolution of new types, now classified as Hybrid Dwarf Polyanthas. These form excellent dwarf hedges, approxi-

mately 3 feet in height. Kirsten Poulsen, red; Else Poulsen, rose-pink; and Salmon Spray, salmon-pink and carmine, are three of the best varieties.

The quickest and most effective method of obtaining a fine hedge in a short time is to plant a double, alternate row of trees, the distance between the trees and the rows being governed by the varieties planted. With the dwarfed hedges, 2 feet may be allowed from plant to plant, but the rampant varieties used for boundary hedges will require about $3\frac{1}{2}$ feet. Close planting is generally better where any doubt exists, as surplus growths can always be removed.

Hard pruning after planting is advisable, so that the first season will be devoted to building up of strong growth from the base. In the second season sufficient wood will normally have been made to furnish a hedge of the desired height, whilst at the same time quite a good display of blooms will be obtained. In the third season the flowers will be freely produced.

By interplanting early, mid-season and late-flowering varieties it is comparatively easy to maintain a succession of Roses from the end of May until October or later.

CHAPTER 5

How to Make Garden Paths

CAREFULLY planned and constructed paths add considerably to the interest of the garden ; the charm of crazy-paving paths in an old-world garden is too well known to need description. In most cases gravel is the material employed for the construction of the paths. It has its advantages, and in some gardens is almost a necessity, especially when a large area has to be laid down. It requires constant attention, however, to maintain a pleasing appearance, or it will become infested with weeds, whilst bad drainage will encourage the growth of unsightly moss.

Drainage Necessary. Any form of path should be laid on a good drainage system. The next essential is to destroy deep-rooting weeds before laying down any material other than concrete. This is easily effected if the site of the path is watered with a strong solution of an arsenical weed-killer. Allow a week for the weed-killer to do its work, then remove the surface soil to the depth of 9 to 12 inches, and water again with a solution of weed-killer. The excavation is then filled to within 6 inches of the surface level with suitable drainage material, such as clinkers, stones, or broken brickbats, or slag. Six inches of a good binding gravel are laid over

this and rolled firm, taking care to camber the surface in order that water may drain to the sides.

An asphalt path is probably the most useful and at the same time the least ornamental ; it is, in fact, ugly enough to spoil the most attractive garden, and is to be avoided if possible. It wears well, and is easy to sweep and keep tidy, but those attributes exhaust its claims to attention. It cannot be considered as suitable for a garden of flowers, though it may be advisable in a fruit or kitchen garden.

There is no path so useful and so simply and economically made as one of gravel. If the foundation is well laid and the surface is rolled whenever opportunity offers, and especially when it is moist, a path of gravel is satisfactory. If, however, it is badly made and neglected, it is a perpetual nuisance ; the gravel sticks to the boots after the least rain, and it is difficult to keep the surface firm.

A grass path is particularly attractive, and flowers never look better than when the beds in which they are growing are separated by broad green paths. Needless to say, the paths must be kept closely mown and well rolled, and the edges trim, otherwise the words written in its praise must be modified. When it

is considered that the grass is liable to become bare in places if given hard wear, and that it needs a considerable amount of attention to keep it in perfect condition, it must be admitted that the question as to whether it is worth while has to be studied. Finally there is the paved path made of bricks or flat stones.

This is the most expensive kind of path to lay, but it is perhaps cheapest in the end, for it needs no mowing or rolling, and there is no doubt as to its beauty.

The Asphalt Path. The making of this is best left to the working builder; he has the materials, and will probably carry out the work far better than the amateur gardener. However, those wishing to undertake the work will find the following recipe useful; it shows how an inexpensive path may be made—one that answers as a substitute for asphalt: Take out the soil and put in 1 foot or so of broken rubble, burrs, brick-ends, ballast, broken stone, etc., and make it firm. Get together a quantity of sawdust and make two heaps of it, each containing an equal quantity. Now melt some pitch or tar in an old bucket, pouring it into the centre of one of the heaps of sawdust. Mix well and add pitch till all the sawdust of the first heap is thoroughly tarred. Allow to stand for a short time. Meanwhile, mix with the other heap of sawdust about one-tenth of its quantity of coarse sand. Finally mix this with the tarred sawdust till a material much like "the topping tar" of the asphalters is obtained, if necessary adding more melted pitch.

The stone, etc., of the path should now have a light sprinkling of melted pitch. Then begin at once

to lay the sawdust asphalt, keeping the spade well wet. A layer 2 inches thick is enough; spread it evenly and throw fine sand generously over the surface. Get your assistant to hold a water-can over the roller and roll the path at once. If the roller is not kept wet the asphalt sticks to it. If the path should ooze, put on more sand and well roll.

In making a gravel path the point of chief importance is to put in a good foundation. The ground should be excavated to a depth of quite 12 inches, the space to the depth of 6 inches being filled with rough stones, broken bricks or clinkers, that will serve to ensure a dry surface. Then comes 3 inches of rough gravel, and finally about 3 inches of finer material; the two upper layers must be rolled down separately. When finished, the middle of the walk should be higher than the side, so that excessive rain may run off. One of the secrets of keeping a walk in good condition, apart from the question of its making, is to roll it frequently. If this is attended to after rain, the surface becomes hard as soon as it dries again.

Crazy-Paving. The most popular materials for the surfacing of a garden pathway are crazy-paving stones. These are cheap and comparatively easy to lay, and, in addition, give an artistic finish to the garden. They can be obtained in thicknesses varying from one to two inches. For paths which have to stand a lot of heavy wear the 2-inch material is necessary, but for those which are only walked on occasionally the thinner stones are quite satisfactory. To estimate the amount of stone required, multiply the length of the path by the width,

and allow one ton of the 2-inch material for each 8 square yards. The average price is thirty shillings per ton.

The path must have a firm, well-drained foundation, otherwise the stones will sink in places and form an uneven surface on which pools of water will collect in wet weather. The soil should therefore be taken out to the depth of 9 inches. Six inches of stones or clinkers should then be placed in the bottom and made solid with the roller. Sifted ashes should then be set on these, sufficient being used to ensure that when they are well rolled down, enough space will be left upon which to set the paving stones.

Care must be taken in preparing the surface. Make it as smooth and even as possible, and little difficulty will be experienced in laying the stones. Before setting the stones in position obtain some battens or builder's laths and fix them along each side of the path. This will assist you to keep the pathway of even width if the outer stones are placed against them.

In laying the stones, select those with a fairly straight edge for the sides of the path, filling in the centre with the irregular pieces, taking care to avoid continuous joints. Set the stones on each side of the path first, for a distance of about 3 feet, and make them level with the aid of a straight-edge and spirit-level. It is an easy matter to fill in the centre and keep them level by means of the straight-edge laid across the path.

As each stone is laid see that it is firmly bedded by tapping it with a wooden mallet or the handle of the trowel. Although the stones do not vary much in thickness, in some

cases it will be found necessary to scrape away some of the ashes, whilst in others more will have to be added to maintain an even surface. It is best to cement the joints between the stones. If the stones are dry, damp the edges with a wet brush, or the cement will not adhere.

Home-made cement "stones" are considerably cheaper than the real stone, and the difficult task of laying the irregular slabs is eliminated. Such a path is very firm, as the bottom of each "stone" conforms exactly with the contour of the ground underneath it.

Coarse sand, 4 parts, and cement, 1 part, are mixed dry, and again whilst water is gradually added, until the whole assumes the consistency of mortar. A small heap of this is placed in position, roughly smoothed out by means of a "float," and shaped with a builder's trowel.

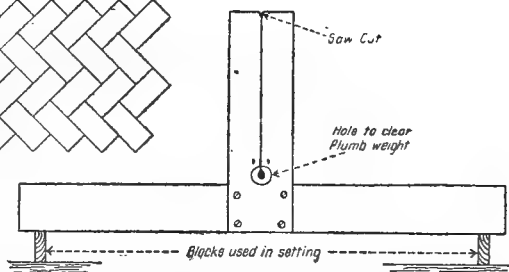
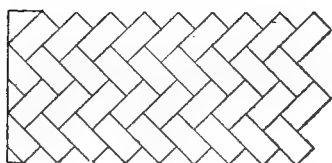
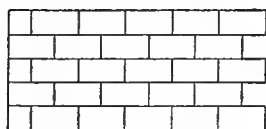
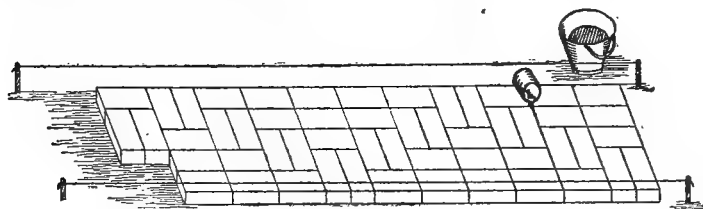
Brick Paths. The advantages of brick paths are so great that it is surprising they are not more popular. Bricks are lighter to handle, and cheaper than crazy-paving, and compare favourably with the cost of a cement path, to which they are in many ways superior. They are easily and quickly laid, have a non-slippery surface, a good appearance and, owing to their thickness, a long life.

A useful brick is the "Fletton"; it is pink, and the price is about 7s. 6d. per hundred. When "taking out quantities," count the size of a brick as being 9 inches by $4\frac{1}{2}$ inches by 3 inches thick; this will allow for the cement used. A path 23 inches wide takes five bricks to its width, and a hundred bricks will be needed for each 15 feet. With

regard to cement, etc., allow three pounds of cement and half a bushel of sand per hundred bricks. The total cost is, therefore, approximately $3\frac{1}{2}$ d. per square foot.

A handy tool is the level shown

the string lies. Now lift off the blocks, being careful not to disturb them, and place it in the reverse direction, mark the position of the string, and the point midway between these marks will be the



When laying a brick path the spaces between the bricks should be filled with cement to prevent the growth of weeds, as shown in the top sketch. Designs for brick paths and the level used in the work are also illustrated.

in one of the sketches. It is easily made and can afterwards be used for levelling lawns. Take a board about 6 feet long, say 6 inches by 1 inch, and plane one edge true. Screw to it another piece $2\frac{1}{2}$ feet long to form a "tee," make a saw cut to hold a plumb-line and a hole to clear the weight. To calibrate, stand it on two blocks and put a mark just above the weight, where

position of the string when the base is level.

If the path is to slope away from the house (to take away rain water), it is easy to work out the amount of "drop" required in 2 feet (half an inch is useful) and make it on the level.

Preparing the Site. Prepare the ground by rolling well if possible. Put small stones, cinders, etc., on

and make a good level foundation. Mark out by means of string and pegs, being careful to see that they run parallel with a fence, for example. To lay the bricks is simplicity itself. Make about a pailful of cement at a time, using 2 parts sand to 1 part cement; make it thick enough to apply with a trowel.

Laying the Bricks. Start at one end and place a corner brick. Take the next brick and put a dab of cement about as big as a matchbox on one side; press against the first brick and continue working the width of the path, putting just a dab of cement on the end and face of each brick. Use the level at every 3 feet, and if you find any high places, remove the bricks and scrape away some mould with a shovel. It is a good plan to have some mould handy to fill in any low places. This may seem a lengthy process, but actually it is quite rapid.

Allow a day for the cement to set, and make a thin mixture of 3 parts sand to 1 part cement. With the aid of a tin-can squeezed at the top to form a jug-like lip, pour it into the spaces between the bricks (about half an inch wide). When this sets the path will be ready for use. If the weather is cold, cover the path with sacks or mould until the cement has set.

The appearance may be improved by "pointing" with cement, blackened by adding soot or "vegetable black," but this must be done well. A number of interesting designs may be made, according to the arrangement of the bricks, and an edging of tiling or bricks looks well.

If the path is left higher than the garden, it is effective with its

square edges left unadorned, and it serves the purpose of keeping the path free from soil.

Concrete Paths. Those who are tired of the incessant weeding of gravel paths may profitably make paths constructed of concrete. The gravel is not wasted, for it can be used for coarse concrete to fill in the bottom layer, finishing off the top few inches with the fine. Mix the gravel in the proportions of one bucketful of cement to five bucketfuls of gravel. Lay this 2 to 3 inches in depth over the length of the path, allow a day to dry, then finish off with 1 inch of the fine mixture, cement 1 part, sand 4 parts. The coarse concrete is laid by using a builder's "float," and the fine with a builder's trowel.

To prevent cracking, the top surfacing may be divided at intervals by the insertion of thin pieces of wood, which will simulate the appearance of stone paving. Or it may be laid as crazy-paving, in which case the "stones" are individually shaped in position by means of the trowel.

A small heap of the fine concrete is laid in position, roughly pressed flat with the float, and shaped with the trowel. The next stone is made by placing another heap close to the already-moulded stone, pressed until it comes within 1 inch of the edge of the laid stone, and moulded into shape, repeating until the whole surface is covered. Such a path will be weedless if sifted ashes are brushed into the interstices, and will last for ever.

Real crazy-paving can be a source of trouble when laid direct on soil, for weeds and grass cannot be kept from growing in the interstices. Unless dwarf plants are required to

grow between such stones, weeds may be avoided by filling in with a contrasting coloured concrete. First remove weeds and soil to a depth of 1 inch, then fill in the spaces with coloured concrete made into thin mud by adding plenty of water whilst mixing. This is easily introduced by means of the trowel, and gives a clean and pleasing result. No. 1 buff Colorcrete is specially suited for this purpose.

A quick method of making a clean path is to lay down a fine concrete mixture to a depth of 2 inches after removing the gravel, and to mark this out into lines in simulation of crazy-paving, but not cut through to the soil. Such a path looks very well, is clean, and requires no bottom foundation of the coarse concrete if the ground was well rolled or rammed. The cost is about the same as gravel, and the first cost is the last.

Permanent edgings to paths are also easily made *in situ* by means of concrete. Boards are placed along the sides of the paths and held in position by means of pegs, to form a shallow trough of the desired width. A brick placed on edge between the boards serves as a good guide for height and width when laying. Fill in with coarse concrete, making the mixture rather sloppy. Puddle the mixture well down to the sides of the boards with the trowel. Thrust the blade of the trowel between the inner edges of the boards a few times as each lot is laid, to ensure a smooth finish. Remove the boards when the mixture has set hard.

Cement crazy-paving is effective when forming a footway between Rose beds or round a Lily pool, for paving a sunk garden, or as a foun-

dation on which to rest a garden seat. Such a foundation prevents rotting of the legs of wooden seats, and worn patches of grass, and is always dry. The grass is removed, its space being filled with cement "stones" laid *in situ*, as already explained. The cut edges of the soil act as a mould and make the use of boards unnecessary.

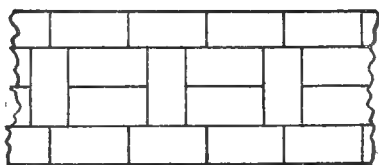
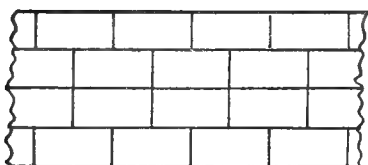
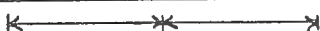
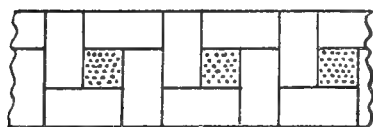
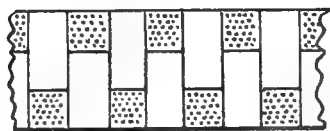
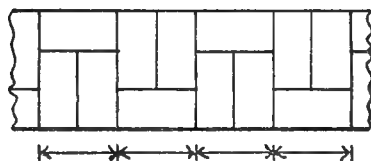
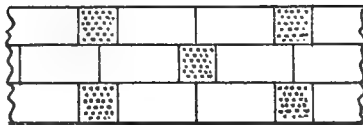
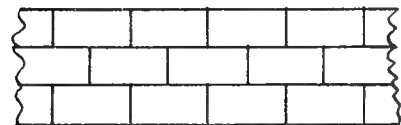
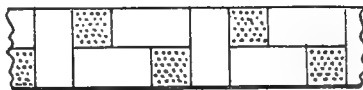
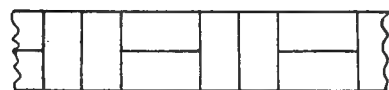
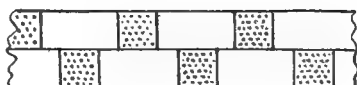
Path made of Concrete Slabs.

One of the simplest forms of path construction is to use medium-sized concrete slabs of regular shape. The best size is 2 feet by 1 foot, with a thickness of 2 inches. Slabs of this size are easily obtained and handled, and are readily laid in position, giving an attractive, dry, non-slippery path. This size, too, is in scale with the lay-out of most gardens of medium size, and does not appear so formal as larger sizes. The use of squared slabs avoids the trouble, which is experienced with crazy-paving, of fitting together many-shaped pieces.

The cost of each slab at the works is round about 10d., and an estimate should be obtained from your nearest concrete works for the approximate number required together with the cost of cartage.

The cement colour tones in very well with the natural surroundings. There is nothing worse than the blatant paths seen in some gardens. Paths are the only means for getting from one part of the garden to another. If desired, concrete slabs can be made to order, to imitate any natural stone, and the warm yellow-brown tones of sandstone are particularly attractive.

Colouring the Concrete. If a little colour is desired to be introduced into the grey cement path, squares of coloured cement can be made up



Reference to each design will be found on pages 52 and 53. The top left-hand sketch is A. Read from left to right.

at a cost of about 8d. each, or ready-made 12-inch by 12-inch quarry tiles, as used for paving kitchens and loggias, are easily obtainable from builders. These range in colour from reddish-purple to warm brick tones. They should not be used too frequently in the path. In the accompanying diagrams the coloured squares are indicated by shading.

The width of the narrowest path should not be less than 2 feet, especially if bordering plants are allowed to encroach on the path, as this greatly reduces the effective width. Main paths should be 3 feet or possibly 4 feet wide.

In the construction of the path the ground should be excavated for 5 or 6 inches, and a layer of stones, rubble, or clinker put down and well rammed to an approximately level surface. Then cover with a layer, an inch or so thick, of fine breeze or coarse sand, and bed the concrete blocks on this. Make sure that the slabs are well and evenly bedded over their whole area, and that there are no cavities beneath.

Test the general level by applying a straight-edged board and seeing that the faces of all the slabs touch it. In remaking an old path, take up the surface, rake it over, and ram and level to an approximately true surface, and, as for a new path, finish with a layer of breeze or sand and bed the slabs.

Designs for Paved Paths. There is a large variety of designs for paths, especially for the wider ones, and a selection is shown by the accompanying drawing. Many more designs can be worked out. It is best in path designs to keep to fairly simple patterns, especially where the paths are narrow, and in

small gardens. Designs A to F are for 2 feet wide paths.

A shows a simple design with the end joints in each row "breaking joint."

B is similar to A, but has 12-inch squares introduced in it, giving a little more interest.

C has an attractive disposition of rectangular and square slabs, and forms an attractive path. This is preferable to the previous design, especially if the square slabs are of a bright colour.

D is, perhaps, the best design of all. It is simple and most effective when carried out, and the cross slabs tend to bind the path together. It is easy to lay, and there is no danger whatever of the alignment of the joints becoming irregular.

E. Here there are slabs, first crosswise and then lengthwise of the path, and it is a variation of the previous design.

F is an elaborated form of D, including square slabs, and forms a pleasing alternative.

Designs G to L are for 3 feet wide paths.

G is an expansion of design A, a further row of slabs being added. The effect of the three rows is preferable, as the path seems better balanced, the end joints of the outer rows being in line.

H introduces square slabs, and they occur in a proportion to produce a satisfying pattern.

I. This design is made up of units, as indicated by the arrows, each unit comprising three blocks, with alternate units reversed.

J. This pattern is composed of a long and a short slab, and the repeat consists of a simple reversal of the slabs. Too much contrast in

colour between the slabs should be avoided.

K is another unit design, as shown by the arrows, which also bonds together excellently and allows of the use of coloured squares if desired.

L. Here larger units are used as the arrows indicate, and adjacent units are reversed. No square blocks are required.

The last two designs are for 4 feet wide paths. There is a great variety of designs for the wider paths, but the two shown are simple and attractive.

M shows a neat and simple pattern, formed with rectangular slabs only, and would be suitable for a path from the front gate if rock and other plants are to be allowed to spread over the edges unrestricted.

N. This is a simple path to lay, and, with its certain amount of contrast between crosswise and lengthwise slabs, forms an interesting design.

No cutting or fitting is required in the run of any of the above designs, but this may be necessary at the beginning and end of the path if it has to run between two definite points. In the case, however, of designs D, E, F, I, J, K and L the only possible cutting or filling that is required is at the end of the path, as the path is started from a through cross joint.

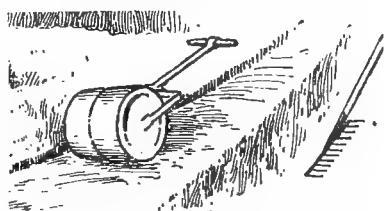
Perhaps the best method of filling up is to mix up a little cement, place in position, and smooth over. It is not easy to break the blocks to a required size, and if breaking is attempted, allow a little margin for error, and chip the raw edge away to the right size.

If a branch path is contemplated later, it is an easy matter to take

up a few slabs of the main path and properly work the side path into the design.

Renovating Garden Paths.

Gravel paths, as well as those surfaced with ashes and similar materials, often become unsightly and slippery through the accumulation of moss and soil on the surface. If the path was properly prepared in the first place, it is simpler to



Garden paths can be renovated by raking the gravel thoroughly and rolling.

renovate the surface, but a badly constructed path will never be satisfactory, and the only course open is to remake it.

When renovating the surface of a well-made path, all that is necessary is to remove the moss, loosen the top, and roll it solid again. Scrape off the moss with a draw-hoe and brush the surface vigorously with a bass broom or stiff besom. Then loosen the top 2 inches by jabbing it with a well-worn garden fork. The large lumps should then be broken up by running a light roller over the path. Next rake it vigorously with a small-toothed rake. This will bring the fresh clean gravel to the top and at the same time level the surface.

Having made the path smooth and even, a thin layer of new gravel may be sprinkled over the surface, although this is not always necessary, as the underlying layer of

gravel when raked to the top often looks as "good as new."

Before rolling it again, sprinkle the surface lightly with water to help the gravel to bind. Whilst the rolling is being done, keep a sharp look-out for the inequalities of the surface, and remedy them by raking gravel lightly into the depression.

This scarifying of the surface is useless for badly-made paths. The

only remedy is to reconstruct them. Loosen up the surfacing of gravel, take it off and place it on one side ; then dig out the soil to the depth of 12 inches and put down a layer of stones to the depth of 8 inches. Upon these spread 2 inches of smaller stones and roll them down firmly. Then return the gravel, roll that in, and spread a layer of new gravel on top and treat it as advised for renovating the surface.

CHAPTER 6

Making and Managing a Lawn

A WELL-KEPT lawn adds greatly to the charm of the garden, and time devoted to its maintenance is not misspent. It is so difficult to effect a radical improvement in the lawn if it is found unsatisfactory after a year or two, but success can be assured if the preparatory work is sound.

If a lawn is to be made on heavy land that becomes very wet in winter, it is essential to put in drains if a really good sward is wanted. The simplest way is to dig a trench 2 feet deep at one side of the site for the main drain, and other trenches crossing the site and leading into it; these should be 8 to 10 feet apart, and 10 or 12 inches deep where they begin and gradually deepen to the main drain. Drain pipes may be put in the trenches, care being taken to cover the joints with clinker or similar material to prevent their becoming choked. It is, however, cheaper to fill the trenches with clinker or stones, and this method answers well. Only on clayey land is such preparation required.

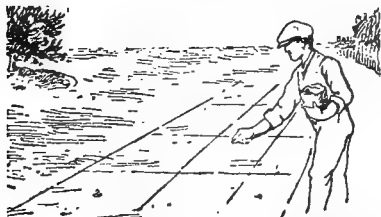
Preparing the Site. A lawn can be made either by laying turf or by sowing seeds; the latter way is far cheaper. The site for a lawn must be dug at least one "spit" deep; that is to say, to the depth of the spade. If it is dug two spits deep,

so much the better. If the ground is rather heavy, such materials as leaf-mould, sand, old potting soil, wood ashes, sweepings from garden paths, and well-decayed manure should be added to the surface. If the land is light, manure, leaf-mould, and chopped turf will be beneficial.

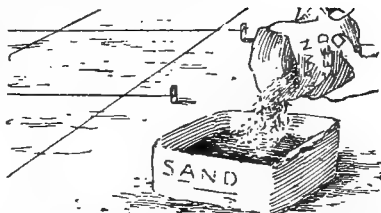
These preparations must be made a month or two before sowing grass seeds or laying turf. The soil will need a good deal of attention beforehand. All weeds that are seen must, of course, be taken out and the soil broken down to as fine a state as possible with fork, hoe and rake. It must also be rolled from time to time when dry, so that the surface will be firm.

The best time to sow lawn grass seed is in early September or in spring—late March or early April; the former is to be preferred.

In sowing down a lawn 1½ ounces of grass seeds should be used for each square yard of lawn. Before ordering the seeds the seedsman should be consulted, for various mixtures are made up to suit different kinds of soils, situations, and purposes. For instance, a lawn required to stand heavy wear on clayey soil needs a different mixture of grasses from an ornamental lawn on light soil. It is unwise merely to buy a few pounds of grass seeds



The site for a lawn should be marked off in sections to ensure an even distribution of grass seed.



It is an advantage to mix lawn grass seeds with sand; they can then be sown more evenly.

in the belief that they will suit any kind of land.

Sowing Lawn Grass Seeds. As it is essential to distribute the seeds as evenly as possible, the ground should be marked off into a number of squares of say 3 or 4 yards across, and the seeds separated into as many portions as there are squares.

When the site has been made firm and level, the seeds are sown, choosing a calm day when the surface is dry. When seed-sowing is finished, the seeds are covered by raking the soil with a wooden rake, and finally the ground is rolled. Some protection from birds is generally necessary; this can be afforded by black thread stretched between sticks inserted here and there. When the grass is 6 inches or so high it ought to be cut with a scythe or with a lawn mower of which the blades are set high.

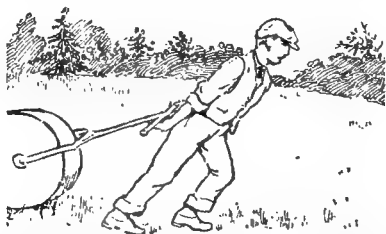
The frequent use of a besom over

the grass has quite a stimulating effect on growth, so use it as often as possible, even when there is no rubbish to be swept up. Sticks, leaves, etc., should, of course, always be removed before rolling and mowing.

Rolling the lawn is of the greatest importance, not only because it improves its appearance; by consolidating the sward the grass is assisted, small inequalities of the surface are removed, and a firm surface is assured. There is a mistaken impression among many amateurs that the ideal time to roll a lawn is when it is very soft, following continuous rain. As a matter of fact, especially on heavy soil, this is the worst time for this work, for it results in a "caked" surface when drier conditions return, and air is thus prevented from entering the soil. Air must enter, and this is why rollers are



When the young grass is 6 inches high it should be cut with a scythe, or with the blades of the machine set high.



A lawn cannot be kept in good condition unless it is rolled frequently when the ground is moderately soft.

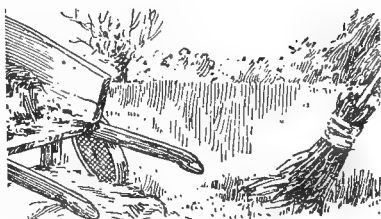


Lawns on heavy soil are improved by raking in spring and applying sand freely.

sometimes seen with spikes on the cylinders; the surface is consolidated but not sealed.

Weekly mowings of the lawn are equivalent to the removal of heavy crops from the soil, and in consequence the ground may become impoverished. The immediate result of continual mowing is a patchy appearance, due to the irregularity with which the grass grows and to the spread of certain weeds. Nothing improves the lawn quicker or better than the supply of nutritious top-dressings. Sand is not a feeding mulch, nor will it bring the grass back properly, but sand which has been enriched in some way does good. The most frequently adopted method of enriching the sand is to add a fertiliser to it, say a 6-inch potful of sulphate of ammonia to one barrow-load of sand.

Fertilisers for the Lawn. Of rich feeding mulches the best are com-



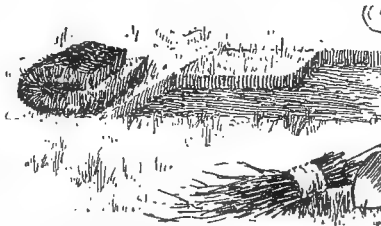
A top-dressing of sifted compost consisting of leaf-mould and decayed manure is beneficial in spring.

posts which contain short manure or sifted leaf-mould, or both. They must be sifted fine, spread evenly and not too thickly in February or early March. Bonemeal is a fine top-dressing, given at 3 ounces to the square yard, but guano is quicker in action. Native guano is one of the best top-dressings to give. Basic slag is a useful lime-phosphate dressing in autumn, but encourages clover. Kainit keeps the grass in good colour; it should be top-dressed on the grass in early winter.

Strong nitrogenous manures, nitrate of soda and sulphate of ammonia, force the grass up strongly, but are exhausting manures. The special lawn manures sold by seedsmen are to be recommended. Sulphate of ammonia and sulphate of iron make fine daisy-killers, and help to rid the lawn of other similar weeds. Mix seven pounds of the



Before mowing is begun the lawn must be swept to remove stones and sticks which might damage the mowing machine.



Bare patches on a lawn are conveniently mended by laying fresh turf in autumn or early spring.

former with one pound of the latter, and apply where the daisies are growing. Do not apply more than one ounce per square yard.

Lawns which show signs of wear and tear should, if possible, be given a rest, and during that time mowing may be done less frequently, to give the grass strength.

Nothing helps a lawn on poor soil better than a water sprinkler, which may be set going and allowed to throw a fine spray for, say, half an hour. If the burning sun, even then, is destructive, give a very light dressing of nitrate of soda, half an ounce per square yard. Repeat this three weeks later.

Constant and close mowing frequently proves injurious, and many a lawn recovers when the grass is allowed to grow a little longer ; allowing the fine mowings to lie as they fall is also a tonic, and is worth considering.

When a lawn is composed of a clayey retentive soil, unsightly cracks appear in the height of summer. Such cracks, by leading to undue drying up, often prove hurtful to the grass. A cure is to sift some soil, sand, or dry leaf-mould, scatter this along the crack, and then brush lightly in.

Mowing will need attention before the grass gets long in spring. The first cutting of the season is bound to be tough, but there is no need to make the work harder by setting the machine to cut very low; there is plenty of time ahead to lower the knives, if necessary. The oftener the lawn mower is used, the better will be the surface and the work is lighter. When the grass is growing quickly in the summer, mowing twice weekly will be far more satisfactory than once. The

side-wheel machines are very popular because they are cheaper and easier to work than those of the roller type, but they should not be used when the lawn is soft, or the wheels will mark the surface badly.

Uneven edges spoil the appearance of otherwise well-kept lawns, so when mowing commences trim the edges evenly with the half-moon tool, and subsequently clip them weekly to keep them neat and tidy.

Weeds on Lawns. A weedy lawn can never be satisfactory, and if the weeds are allowed to spread they will gradually overgrow the grass, so that the first step is to get Daisies, Dandelions, Plantains, and other weeds dug out. Get the roots out as deeply as possible, using the weeding fork sold for the purpose. This may be tedious, but it pays for doing. Lawn seed should also be used in spring, according to the directions supplied with it.

If bare patches have developed these must be sown with grass seeds in spring. Where the whole lawn is thin, scatter seeds over the surface when the grass is dry in spring and cover lightly with fine soil.

Clover on the Lawn. Clover is objected to by some people, and often proves very difficult to eradicate. Special mixtures sold by seedsmen can be applied to destroy this, or sulphate of ammonia may be used sparingly. In each case the remedy will need to be persisted with to be successful. Lawn sand can also be used ; it stimulates the growth of the grasses and destroys weeds. See that this is used according to the maker's directions, and do not be alarmed when the grass appears to be scorched after it has been applied ; it will quickly recover. If this is used on very

weedy lawns, with the idea of saving labour, it will probably be found necessary to sow a certain amount of grass seed later to furnish the bare patches resulting from its use.

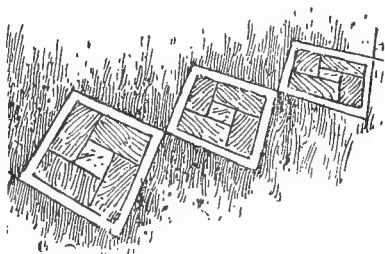
To Kill Moss on Lawns. The usual cause of mossy lawns is either poor soil or bad drainage, and often a combination of both ; but an exceptionally wet year will frequently bring moss on a lawn which does not usually suffer.

When the moss is very thick you can get a lot out by using a rake, but if it is not too plentiful, lawn sand may be used with advantage. If, however, the assistance of the other constituents of the sand is not needed, you can use the moss-killing section by itself. The chemical employed is sulphate of iron, which may be scattered as a powder at the rate of a quarter of an ounce to the square yard in dry weather, when the dew will moisten it just enough to help the action.

A quicker way is to dissolve the same quantity of sulphate in a gallon of water and sprinkle the lawn, using a watering-can. After using iron sulphate a little of the weaker grass may go brown, but if you sprinkle the lawn with a very weak solution of nitrate of soda about a fortnight later the grass will be greatly improved, and with the moss removed will be free to grow strongly.

Worms on the Lawn. These are the cause of muddy lawns ; although earthworms do much in the shape of draining and aerating heavy soil, they throw numerous casts. When these casts are rolled down they become hard and kill numerous little grass plants. The old way was to brush these casts

away with a besom, but the next morning they would be as numerous as ever. Nowadays these lawn pests are exterminated with a preparation called "Wormkiller," which should be put on in muggy weather when the worms are near the surface. The third or last week in April is the best period in which to do this. It must be thoroughly watered in with the hose, and in ten minutes' time



Stepping stones on the lawn prevent the grass being spoilt.

the lawn will be covered with struggling worms. A further application of wormkiller in autumn is often advisable. A home-made wormkiller can be made by using a good handful of chloride of lime in fifteen gallons of water.

The Care of a New Lawn. Newly-sown lawns require careful treatment the first year. However carefully the ground may have been prepared, weeds will crop up, and, unless removed in their seedling stages, will obtain such a firm hold that they will be difficult to eradicate later on. Weeding should be done as soon as the grass is about 2 inches high, and the soil should be moist when the work is done. If it is too dry many of the weeds will snap off just below the soil, and the perennial roots which are left will spread more rapidly. On the other hand, if the ground is very wet,

large clods of soil, containing many grass seedlings, will be pulled up, resulting in bare patches.

Care must be taken in getting about on the grass. The best method is to use wide boards to kneel on to avoid bruising it. Weeding must be done systematically. Mark off a 3 feet wide strip with two garden lines at one end of the plot, and when this is completed move them over to the next strip, and so on until the plot is finished. If any bare patches are found in the lawn after weeding, scatter a pinch of seeds on them and cover with a layer of fine soil. Then run a light roller once over the whole of the lawn.

The first cutting should be done when the grass is 5 inches in height, and 1 inch of the tips should be removed. Most grass seed mixtures contain a proportion of coarse, stronger-growing grass which protects the finer grasses beneath. If the lawn is carefully examined, the finer grasses will be observed to have grown about 2 inches high, whilst the other grass will be 5 inches in height. The first mowing then consists of removing the tips of the coarse grass, leaving the finer kinds intact.

If possible, mow first with a scythe, or, if the lawn is a small one, clip off the tips with a pair of shears. When the lawn shows signs of making new growth, roll it again lightly. Remember, however, that rolling must be done only when the soil is moist, not wet or dry. For the second mowing the machine may be used, but the knives should be adjusted so that only 1 inch of the tips is again removed.

Lawn Sand. Lawn sand is a

mixture which is employed to assist the growth of the grass on the lawn and at the same time to keep down weeds. The active principle of lawn sand is either sulphate of ammonia or sulphate of iron. Some "sands" contain the former, as much as 30 per cent. having been found, and they are excellent for assisting the growth of grass so that the weeds are stifled and prevented from disfiguring the lawn. The sulphate of iron mixtures are more for killing weeds and giving the grass a rich colour than for use as a manure. This sand can be bought in prepared form with directions for use.

Lawn sand can be made by using $\frac{1}{2}$ lb. of sulphate of iron (called copperas in shops), $1\frac{1}{2}$ lb. of sulphate of ammonia, and from 10 to 15 lb. of any kind of sand. Grind the chemicals into a fine powder and mix thoroughly. Spread the mixture evenly over the lawn at from 2 oz. to 4 oz. per square yard, or "dust" some into the heart of each weed. Lawn sand should be applied in October, and again in April.

How to Lay Turf. By laying turves a lawn can be formed more quickly than from seeds. This method, however, is recommended only if quick results are required and good turves, reasonably free from weeds, can be obtained. The site must be well drained, otherwise the surface will be slippery in wet weather, and the accumulation of moisture, by excluding air from the soil, will cause it to become sour and overgrown with moss. On low-lying sites it is necessary to lay drain pipes at least 12 inches below the surface, but in normal positions, deep digging and loosening of the subsoil will be sufficient to enable

free passage of water into the lower levels.

If humus is lacking, it should be incorporated in the form of leaf-mould or well-decayed manure. Whatever material is applied it must be evenly distributed, or the ground will sink in uneven patches. It should also be tested for lime, and sufficient of this material applied to correct acidity. Then the ground should be levelled, consolidated with a roller, and finally raked to remove surface stones. Each turf, before it is placed in position, should be examined and all weeds entirely eradicated.

A heap of sifted soil should be placed near at hand so that as each strip is laid any inequalities may be rectified as the work proceeds. A space of about $\frac{1}{2}$ inch must be left between each turf to allow for expansion, which takes place when the turves are rolled or beaten down. Take care also to alternate each layer so that the joints are not continuous. Test each strip with a straight edge after it is laid and rectify any unevenness by lifting the turves and adding to or scraping away the surfaces.

After the turves are laid, apply a liberal dressing of finely sifted soil and work it well into the joints with a broom. Allow a few weeks to elapse, to enable the roots to obtain a hold of the soil, then pass a roller over them or use a turf-beater to make them firm. The first cutting with a mowing machine should be done with the blades set sufficiently high to take off the tips of the grass only, the second mowing a little lower, and so on, until when vigorous growth is apparent they may be set to their normal level. It is inadvisable to lay turf during

frosty weather. If the turf is on hand and cannot be laid it must not be left rolled up for long or the grass will turn yellow.

A Paved Edge to the Lawn. All gardeners know that the trimming of lawn edges is a lengthy and tiring occupation, and if you have flowers that have spread over the edges it is difficult to avoid damaging them. An effective way of overcoming this trouble is to lay a paved edging. Small slabs of concrete should be made of varying sizes, ranging from 12 inches by 9 inches to 16 inches by 9 inches, and arranged horizontally along the edge of the bed, alternately a large slab, then a small one. These slabs are set in the ground, flush with the turf. Border plants can then be allowed to spread with a charming natural effect. The lawn mower can be run along with one wheel on the slabs and will cut the grass verges neatly; no back-aching work with shears will be necessary.

If part of the rockwork abuts on to the lawn, the tiresome business of clipping round the rocks can be avoided by use of these slabs. There will also be the added advantage that overhanging plants will be protected from damage.

Choosing a Lawn Mower. Broadly speaking, all mowers likely to be of interest to the private owner can be divided into three group-types: the side-wheel hand machine, the roller-type hand machine, and the mechanically propelled machine. Many variations of each of these types are made, all designed to fulfil some special purpose.

The Side-Wheel Machine. Let us deal first with the side-wheel class. This type of machine is popularly

known as the American mower, although, with the new protective duties, it is safe to say that a very large percentage of those sold in future will be of British manufacture. The side-wheel machines are the lowest in price of all lawn mowers, and are suitable for the owner of a small lawn whose needs or resources do not justify the purchase of the more pretentious roller machine.

As the name implies, this type of machine is fitted with a large driving-wheel at each side, from 6 inches to 8 inches in diameter, a revolving cutting cylinder and a long wooden roller at the rear. The handle is usually of the central wooden pattern with a crosshead handle, although one new model has been fitted with a triangulated steel handle. Ten-inch and 12-inch are the most popular sizes, although 8 inches, 14 inches, and 16 inches are listed by some makers. Broadly speaking, prices range from 20s. to 30s.

Several well-known makers also offer a rather better type of side-wheel machine of superior workmanship and fitted with ball bearings to the cutting cylinder; this naturally gives greater satisfaction and longer service. In this case the prices vary from 40s. to 60s., according to the model and size selected.

Other varieties of side-wheel machines are made for special purposes. One has high wheels and a small number of blades in the cutting cylinder to deal with long coarse grass such as is found in orchards and paddocks, while at the other extreme machines are available with fast revolving cylinders and other refinements to make them

suitable for golf greens and similar purposes.

It is customary in the lawn-mower trade to list all side-wheel machines at prices which do not include the grass-box and delivery plate (the latter being the curved plate, fitting behind the cutting cylinder and serving to project the grass forward into the box). Without this, the grass cuttings come out at the back of the machine and remain on the lawn unless brushed up by hand.

The grass-box and delivery plate will cost from 5s. to 10s. over and above the prices of the machine itself.

On account of their low price the number of side-wheel machines sold outnumbers all other types, and they have certain drawbacks which are not present in larger machines. They are not silent in operation, and owing to one wheel dropping off the edge, it is impossible to cut within less than 3 inches of the edge of the lawn or any beds in the lawn itself, with the result that a tedious amount of hand work with the shears is necessary. One or two makers market a special "runner wheel" attachment at about 7s. 6d. to 8s. 6d., which clamps on the front crossbar and overcomes this disadvantage.

Let us now turn to the hand-roller machine, in which the design incorporates a light roller driving and cutting cylinder through the medium of chains or gears. These are comparatively silent in operation, will cut right to the edge of the lawn, and give that striped effect which delights the eye of the enthusiast. They are generally a superior job mechanically, and with reasonable care will give many years' service. Even in the roller

class of machines there is a wide diversity of choice of models, with consequent differences in price.

The Hand-Roller Machine. A cheap model with plain bearings and a generally simplified specification can be purchased as low as £2 2s. 6d., whereas £12 12s. can be paid for a high-grade machine. In roller machines the grass-box is invariably included in the list price of the machine. A number of popular models are on the market, and many famous makers list deluxe machines with one or more of the following refinements: ball bearings, oil bath chain case or gear cover, all enclosed mechanism, hand nuts to supersede spanners for adjustment purposes, steel frames, grease-gun lubrication, detachable cutting cylinder to facilitate cleaning, metal bushes in the wooden rollers, and other features.

In many cases a professional gardener of the old school will prefer the older type of machine without these modern improvements, but the owner-user will be well advised to invest in a machine incorporating such refinements as his resources will permit.

Care of the Lawn Mower. When mowing is finished, clean the machine thoroughly with paraffin, using a spoke-brush in addition to rags. Remove all bits of grass from awkward corners; emery paper will soon get rid of any rust that may have begun to show itself.

When the machine is clean, attention can be given to the cutting part of the mechanism. The knives must be adjusted so as just to touch the underplate. This can be done by screwing or unscrewing the bolts on the bearings at each end of the

knife cylinder, but care must be taken since the slightest turn has a big effect on the relation between knives and underplate. The underplate itself must be examined to see that its edge is not chipped through contact with stones and other hard substances. It should have a fairly sharp, even edge. If this is found to be faulty, it should be reground, a job which can hardly be done at home.

Next, look to the bearings and the drive. Undue play in bearings causes rapid wear and unsatisfactory cutting. Worn brass bearings can often be made to fit better if the inside faces are filed down, care being taken to keep the file perfectly horizontal during the operation. If ball bearings are fitted, nothing will need doing in this direction unless the machine is very old.

Remove and Clean the Chain. Gear-driven mowers need little or no attention as far as the drive is concerned, but if a chain is fitted it should be removed, washed in a paraffin bath, then soaked in warm oil or melted grease for a few hours. When replaced its tension should be checked and a little up and down movement allowed. Adjustment can generally be effected by sliding the roller backwards or forwards. A chain should never be run quite tight.

A motor mower should be decarbonised and the carburettor cleaned out before storing it for the winter. The magneto contact-breaker might be removed and stored in a dry, warm place. Finally, use the oil-can or grease-gun liberally at all necessary points, then the machine can be put away in as dry a place as possible.

Weeping Trees for the Lawn.

Trees with weeping or pendulous branches are peculiarly suitable for planting on lawns, for trees of this kind are essentially garden trees, and are never seen to such advantage as when isolated in a carpet of greenery. Moreover, they afford delightful shade on hot summer days, and those of dense growth provide a secluded retreat in the open air. It is possible to overdo pendulous trees in the garden, for their beauty can only be fully appreciated by contrast with trees of erect or spreading growth. Weeping trees are well adapted for planting in the vicinity of water, and if a lake or stream is associated with the lawn, the waterside should be considered when selecting positions for weeping trees.

In the early cultivation of weeping trees it is important that a lead-

ing branch should be tied into an erect position for a number of years in order that an imposing height may be obtained, for height adds grace and dignity to the tree.

There are several forms of weeping tree. In some cases the principal branches are erect or spreading with the side branches pendulous. The Silver Maple is a case in point. Such a tree increases naturally in height, as do other kinds where the weeping habit is confined to secondary branches. Some forms of Beech, Ash, and Elm behave in this way, and form extremely handsome trees.

Then there is the kind of weeping tree that produces a limited number of more or less horizontal branches from which secondary branches hang for 10 or 15 feet. The leading shoot of this type is often erect, but the branch system



The White Willow, *Salix alba*, is a suitable tree for planting on a lawn. Bark and leaf are shown.



The Willows thrive especially well on damp soil. The Weeping Willow is a beautiful lawn tree and provides welcome shade.



Pink Rambler Roses, mauve Catmint, and Bearded Flag Irises, a colour scheme in the garden in early summer. Even when the Irises are out of bloom their sword-like leaves are attractive.



Few hardy annuals are of greater decorative value in the garden, and more useful for cutting, than *Clarkia*; the salmon-coloured varieties are especially charming.

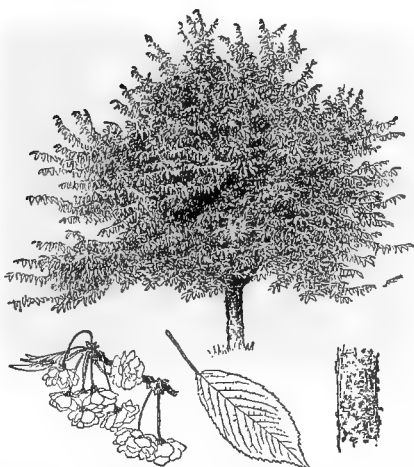


An Iris walk in early summer. The Bearded Flag Irises are represented by numerous richly-coloured varieties, and their grey-green leaves are attractive.



Bringing the garden right up to the house—a paved path bordered by Lavender, Iris, Cosmos, and other plants.

Some of the ornamental Crabs and Cherries which are grown for the sake of their flowers, look well on a lawn.



This illustration is of the double-flowered White Cherry, one of the most attractive of spring-blossoming trees.

is very irregular. Well-grown trees are often picturesque, as in one type of Beech ; but in other cases, as in the Weeping Spruce, the trees are more grotesque than beautiful.

Umbrella-shaped Trees. There is still another type of weeping tree, in which the branches droop in a regular circle, giving a specimen the appearance of a gigantic umbrella. This is the type that is often preferred for planting on lawns in order to provide a living arbour, the Weeping Wych Elm (*Ulmus montana pendula*) being an example. It is this type of tree that requires a good deal of attention in its early days in order to encourage height growth, although it is usually grafted in the first place on tall stocks.

Pruning Weeping Trees. A word or two on the pruning of weeping trees may be advisable before going on to give a list of the best kinds. It is always necessary to keep the branches of weeping trees clear of the ground, otherwise they grow along the ground, killing grass and collecting rubbish. Moreover, the

branch system becomes so dense as to preclude a free passage of air. When pruning it is not enough just to cut the branches so that they do not touch the ground. The lower branches should be traced back to a point where they unite with a larger branch, and be removed at that point. This will leave the lower parts of the tree moderately loose and open, the branches giving no appearance of general shortening. Some branches may be 6 inches from the ground, others twice that height, but there will be nothing stiff or unsightly about them. It is also necessary to thin out the higher branches now and then, and whenever possible it is better to remove than to shorten a branch.

The Best Weeping Trees. The best for lawns are the Weeping Birches (*Betula verrucosa* and *B. verrucosa* Youngii) ; Weeping Beech (*Fagus sylvatica miltoniensis*) ; Silver Maple (*Acer dasycarpum*) ; Weeping Ash (*Fraxinus angustifolia pendula* and *F. excelsior pendula*) ; Weeping Willows

(*Salix babylonica* and *S. elegantissima*); Weeping Elm (*Ulmus nitens pendula*). Of the distinctly umbrella-like type, the following are very effective : *Cratægus monogyna pendula* (Weeping Hawthorn); *Fagus sylvatica pendula* (Weeping Beech); *Ilex Aquifolium pendula* and *I. A. argentea pendula* (Weeping Green and Weeping Silver-leaved Holly); *Prunus Avium pendula* (Weeping Cherry); *Ulmus montana pendula* (Weeping Mountain Elm).

Ornamental Shrubs for the Lawn.

Nothing adds more to the appearance of the lawn than flowering trees or shrubs. On a small lawn it is advisable to place them in groups at the corners or round the margins.

Pampas Grass (*Cortaderia*) is one of the most popular plants for a bed on the lawn. The plumes, when cut and dried, are useful for winter decoration in the house. Double-dig the ground and add plenty of leaf-mould or well-decayed manure to the subsoil. For an early spring effect plant a group of *Forsythia suspensa* and interplant with *Chionodoxa Lucilæ* (Glory of the Snow), or *Scilla sibirica* (Siberian Squill). The carpet of blue flowers beneath the cloud of golden blossom produces a rich feast of colour in early spring.

Yucca pendula (recurva), with its long strap-shaped leaves and erect spikes of white pendulous, bell-shaped blooms, is very imposing. It thrives in well-drained soil and is hardy, except in very exposed situations.

Where an evergreen shrub is required, *Eleagnus glabra variegata* is to be recommended. The evergreen leaves, which are about the size of Bay leaves, are splashed

with green and yellow. Pruning must be done with a knife or secateurs; shears cut the leaves in halves and make them look unsightly.

Flowering shrubs which are easy to grow and produce masses of blossoms in spring are *Philadelphus virginale*, *Viburnum Opulus* (Snowball Tree), and *Spiræa Lindleyana*. Standard trees for large lawns are *Liriodendron tulipifera* (Tulip Tree); *Catalpa bignonioides*, with immense leaves and trusses of scented blossoms; and *Betula alba pendula* (Weeping Birch), a charming tree of graceful habit which does not become too big and is suitable for large or small gardens.

Living Lawn Mowers. The lawn is very often the despair of the amateur gardener, especially when the garden is a new one, recently reclaimed from a field, so that the grass is coarse and full of weeds.

There is no quicker or better method of improving lawns of this type than to introduce a couple of guinea-pigs, who will deal most efficiently with weeds, and whose close nibbling very soon makes the grass fine and thick-growing. Guinea-pigs are the ideal mowers for lawns close to the house, since they are quiet and unobtrusive, and very charming pets.

They can be housed very cheaply in a hutch with a wire run, but their sleeping quarters should be slightly raised, to keep them dry, and the run should be provided with a cover, either a permanent wooden roof or a waterproof canvas cover for protection in case of rain or intense sun.

The run should be moved every day, unless the weather is wet, in

which case it is better not to move the guinea-pigs on to a fresh patch of soaking grass. They will eat it eagerly, because it is fresh, and large quantities of wet grass are apt to disagree with them. In addition to their grass, they will appreciate a ration of corn, bran, bread and milk, roots, or anything else of the kind usually given to rabbits. They are small eaters, so that their food bill will only amount to a few pence a week.

In winter, like other lawn mowers, they must be kept under cover, as they are rather sensitive to cold, and die more frequently from pneumonia than from any other disease. They will winter very successfully in a spare corner of an unheated greenhouse, or in any light, airy shed, free from draughts: either their outdoor hutch can be lifted in, or they can be given a small rabbit-hutch, with plenty of clean hay for bedding.

CHAPTER 7

Popular Hardy Border Flowers

ACANTHUS (Bear's Breech).

An attractive hardy herbaceous perennial with large ornamental leaves, and bearing tall spikes of purple and white flowers in summer. It dislikes being disturbed, and to be seen at its best must be left alone for some years. It thrives in ordinary soil and does not mind slight shade. Planting may be done in October or in March. There are several sorts, of which the best are longifolius and spinosus, the last named having spiny leaves.

Achillea (Milfoil). Popular hardy herbaceous perennials, some of which are suited to the rock garden, others to the flower border. Of the latter the most popular are two double white varieties of *Achillea Ptarmica* known as The Pearl and Perry's White. They thrive in ordinary soil, and produce a profusion of small, double white flowers in summer, reaching a height of 3 feet or so. They spread rapidly, and need careful staking to prevent their becoming untidy. *Achillea Millefolium roseum* has flowers of carmine rose shade, and is worth growing. The rock garden kinds like a sunny place and light, well-drained soil. Some of the best are *Clavennæ*, which has grey leaves and white flowers; *rupestris*,

white flowers; and *umbellata*, white flowers and grey leaves.

Aconitum (Monkshood). A favourite hardy border perennial that thrives in ordinary soil. It may be planted in autumn or spring and dislikes being disturbed. The roots are poisonous. Propagation is effected by separating the roots and replanting the pieces in March. One of the most attractive is *Aconitum napellus bicolor*, of which the flowers are violet-blue and white; it blooms in July. The common Monkshood, which blooms at the same time, has flowers of dull blue shade. One of the best Monkshoods is *Aconitum Wilsoni*, violet-blue, September.

Agrostemma (Rose Campion). The most popular is *Agrostemma coronaria*, a perennial reaching a height of 2 feet or so, with grey leaves and bright carmine rose flowers in summer. It is a popular plant in cottage gardens. It thrives in ordinary soil in a sunny place, and may be increased by dividing the plants in spring, or by sowing seeds in March in a box of sifted soil in a frame, the seedlings being planted out of doors in May. *Rose of Heaven* (*Agrostemma cœli-rosa*) is an annual raised from seed sown in March or April out of doors where the plants are to bloom.

Alstrœmeria (Peruvian Lily). This tuberous-rooted plant thrives best in a border of rather light soil and in a warm, sunny position. When once established it spreads rapidly, soon forming large clumps that sometimes become a nuisance ; it blooms in summer. The flowers



Monkshood (*Aconitum Napellus*).

are very showy ; they are somewhat lily-like in shape. Some of the best are *aurantiaca*, orange-red, and *chilensis*, orange, red, crimson and other shades. The best way to increase the plants is to lift and separate the roots in March, replanting them at a greater distance apart ; but they thrive best when not disturbed for several years.

Althœa (Hollyhock). One of the most valuable hardy border plants ; its spires of bloom are one of the

chief ornaments of the garden in late summer and early autumn. Although the Hollyhock is hardy, it is liable to die off in winter in heavy soil, especially after the second year ; as a rule it is not worth keeping the plants after they have flowered twice. Hollyhocks thrive in ordinary soil, though in that which has been well cultivated they will make a finer show. They are easily grown from seeds sown in a heated greenhouse in early spring ; if the seedlings are potted singly in small pots before they become crowded, and planted out of doors in May, they will bloom well in August and September. Those having no glasshouse should sow the seeds in a box of soil out of doors or in a frame in August. The seedlings may remain in the box all the winter, preferably in a frame, but if necessary in a sheltered corner out of doors. If transplanted at a greater distance apart in other boxes in spring they will be ready to be planted out in May.

There are both double and single varieties, the former being the more handsome ; they come true from seeds. Cuttings may be taken from the small shoots at the base of the old plants in August and placed in pots of sandy soil in a frame, but they are more liable to attack by the hollyhock fungus than seedlings.

Anchusa (Alkanet). One of the loveliest of all blue flowers for the border. It is a perennial in light, well-drained soil, but on heavy ground it often dies in winter. It is easily grown from seeds sown in a box of soil in a frame in early summer, the seedlings being planted out of doors as soon as they are large enough. *Anchusa* can also

be increased by means of root cuttings. When the plants have finished flowering the roots should be dug up, cut into pieces 2 or 3 inches long, and placed an inch deep in boxes of soil in a frame. They will be suitable for planting out of doors in spring. There are three handsome varieties of *Anchusa italica*: Dropmore, bright blue; Opal, light blue; and Pride of Dover, deep blue. They reach a height of 4 feet or more, and bloom in June.

Anemone (Windflower). Among the Anemones there are many invaluable garden flowers. Of those suitable for the border the best are the Japanese Anemone (*Anemone japonica*) and its varieties, which reach a height of 4 feet or so, and bloom in September. The roots should be planted in spring in well-prepared soil, in a sunny or partially shaded position; they are rather slow in becoming established, and should not be disturbed for years.

Some of the best varieties are Queen Charlotte, rose, semi-double; Lady Ardilaun, white, semi-

double; Mont Rose, rose pink; and alba, white. *Anemone sylvestris*, the snowdrop Anemone, bears beautiful single white flowers in May; it is best suited by partial shade and deep moist loamy soil in a "pocket" in the rock garden; it may also be planted towards the front of the herbaceous border.

Of the tuberous-rooted Anemones the showiest are the St. Brigid, a strain or type of the Poppy Anemone (*Anemone coronaria*); the flowers are large and of many brilliant colours—crimson, scarlet, purple, and so on. The tubers may be planted in September or October for a display of bloom in spring, and in February for summer bloom. A sunny place is essential, and well-drained soil of loam and leaf-mould; on heavy, clayey land it is wise to make up a raised bed for them. If the ordinary garden soil is not too clayey it can be made suitable by digging and by adding leaf-mould and sand. In gardens in mild counties it is not necessary to take up the roots after the leaves have died down, but in other places it is wise to do so and to store them dry until planting-time. These Anemones are not difficult to raise from seed sown in a box of fine soil in a frame in spring.

Other beautiful spring-flowering Anemones are *apennina* (blue), *blanda* (blue), *nemorosa* (the common wood Anemone which bears bluish-white flowers), and its blue variety, *Robinsoniana*. The *Hepatica* (*Anemone Hepatica*) and the lovely Pasque flower (*Anemone Pulsatilla*) are other favourites. The latter has large flowers of violet-mauve shade in spring, and does best in loamy soil with which lime rubble or mortar rubble has been



The Japanese Anemone.



Scarlet Anemone
one of our most
beautiful Spring flowers,
the tubers should be
planted in good loam in a
moist situation about 1" deep



Winter Aconite

(Eranthis) are

most suitable for

planting in shrubberies, put them 1" deep



mixed ; it is a favourite rock garden plant, and is grown also in the flower border. The others named bloom in spring, and are happy in a mixture of loam and leaf-mould ; mortar rubble should be added for the Hepatica. All these Anemones thrive well in partial shade. They may be raised from seeds, but grow slowly. The Japanese Anemone

can be increased by taking up the roots in spring, separating them, and replanting, but it is unwise to disturb the clumps unnecessarily.

Anthemis (Chamomile). One or two of the Chamomiles are splendid border flowers, notably *Anthemis tinctoria* and its varieties, *Kelwayi* (yellow) and *E. C. Buxton* (pale yellow). They are easily grown

in ordinary soil, reach a height of about 3 feet, and bloom in summer. Although they are classed as hardy perennials, sometimes they are not long lived, and it is best to raise them from seeds sown in a frame in spring.

Aquilegia (Columbine). No garden is complete without a few Columbines, especially the modern, long-spurred varieties, which are of such varied and beautiful shades of colour. The plant is a perennial,

earlier because they do not like being disturbed; that, however, is not always convenient. By raising the seedlings in early spring, better plants are obtained than by sowing out of doors in April and May, though that may be done.

Armeria (Thrift). The varieties of the common Thrift (*Armeria vulgaris*) are very popular edging plants; their evergreen tufted growth and, in summer, their bright flowers are very attractive. If



Flower of the Columbine or Aquilegia, which is very beautiful in early summer and invaluable for cutting. The plants are raised from seeds sown in spring.

and is usually satisfactory for two, or perhaps three, years, but the finest blooms are obtained by raising seedlings every year. Seeds should be sown in February or March in boxes of sifted soil placed in a frame or greenhouse. Before the seedlings become crowded they must be planted out of doors on a prepared nursery bed of which the soil has been well dug and the surface broken down finely. There they may remain until early autumn, when they should be planted out where they are to bloom. It is really better to put them in their permanent places

planted as an edging they may remain undisturbed for several years, until, in fact, they have become overcrowded. Then they should be lifted in September, pulled into pieces, each piece possessing roots; the latter are then replanted at about 9 inches apart. A few of the best varieties are *Lauchiana*, red; *alba*, white, and *Vindictive*, rich carmine red. One of the taller Thrifts (a variety of *Armeria plantaginea*) is named *Bees' Ruby*; it is a handsome plant with red flowers. Thrift can be raised from seeds sown in April, but these do not always germinate freely. The

seedlings seem to come up best in a box of gravelly soil.

Aster (Michaelmas Daisy). The Michaelmas Daisy is an invaluable flower of late summer and autumn. During recent years many beautiful varieties of rich and varied colouring have been introduced, and they are delightful in the garden for providing cut flowers. They flourish in ordinary soil that has been well dug and manured. The best way to grow Michaelmas Daisies is to lift the clumps in autumn or early spring, separate them into single-rooted pieces and replant the latter. Each plant will produce only one flowering stem, but this will be crowned with a panicle of first-rate blooms ; half a dozen of them make a much more imposing display than a large and crowded clump. This is particularly true of the tall varieties ; those that reach a height of only 15 inches or so may be left undisturbed for a year or two.

There are now so many charming Michaelmas Daisies that it is absurd to continue to grow the old sorts of poor colouring. Some of the best tall ones are Climax, lilac blue ; Ethel Ballard, light pink ; Barr's Pink, deep rose ; Snowdrift, white ; and Beauty of Colwall, double blue. Of those of moderate height, about 3 feet, Little Pink Lady, double rose pink, and Little Boy Blue, double violet blue, are excellent. Of lower varieties *Amellus bessarabicus*, King George and Beauty of Ronsdorf ought to be included in every collection.

Astilbe (Goat's Beard). Splendid plants for moist ground : they thrive in shade and are useful for planting by the side of water. Many of them are very handsome when in full bloom in summer.

They can only be grown to perfection when they are thoroughly moist at the roots ; if in an ordinary border they must be well watered in hot dry weather. Propagation is a simple matter ; it is accomplished by taking up the clumps in early autumn, separating them into as many pieces as are required, and replanting the latter. They look best, however, when left undisturbed for some years and allowed to form large plants.

There are many varieties in white, rose and other colours. *Ceres*, rose pink, *Queen Alexandra* and *Peach Blossom*, both pink, are a few of the best. *Astilbe Davidii*, 4 feet high, has carmine flowers ; *japonica*, white-flowered, 2 feet, and *rivularis*, 4 feet, are others commonly grown. *Astilbe japonica* is a favourite plant for cultivating in pots ; the roots are potted in autumn, and the plants are forced into bloom in a heated glasshouse ; they need an abundance of water.

Campanula (Bellflower). There are few more popular hardy flowering plants than the Bellflowers. Many of them are splendid hardy border plants, while others are indispensable in the rockery. Most of the former thrive in ordinary garden soil, though they develop into finer plants in that which has been deeply dug and manured. They may be planted in autumn or in spring ; the latter season is to be preferred for the low-growing kinds owing to the risk of damage by slugs if small plants are put out in autumn. A scattering of ashes round about them when they start into growth in spring will usually keep this pest away. They are readily increased by seeds sown in boxes of light soil in a frame in

spring, and will bloom the following year. This is a far better method than lifting and separating the clumps, for the plants thrive best when left undisturbed for several years.

Some of the finest border Campanulas are *glomerata*, 18 inches, blue; *lactiflora*, 3 feet, pale blue; *grandiflora*, 2 feet, blue; *latifolia* *macrantha*, 3 to 4 feet, violet blue, and *persicifolia*, 2 to 3 feet; there are many fine varieties of the last named, *Telham Beauty* having the largest flowers.

The Canterbury Bell (*Campanula Medium*) is a favourite summer flower; there are now varieties of rose, pale mauve, white, and other shades of colour that come true from seeds. These are sown out of doors on a seed bed in May or early June, the seedlings being transplanted before they become crowded, and finally put out in October where they are to bloom. Planting, however, may be done in spring.

Most of the easily grown rockery Bellflowers like a spot shaded from the hottest sunshine, and, indeed, do well in a somewhat shady place; ordinary soil with which sand and leaf-mould have been mixed freely suits them. Some of the showiest of those grown in the rock garden are *carpatica*, 12 inches, blue or, in the variety *alba*, white; *G. F. Wilson*, purple blue; *garganica* *hirsuta*, blue and white; *muralis*, blue; *pusilla*, blue, and its variety *Miss Wilmott*, porcelain blue, a very dainty flower.

Catananche (*Cupidone*). An attractive hardy herbaceous perennial that grows 18 to 24 inches high and bears blue flowers in summer. It is easily grown in ordinary soil,

and may be increased by dividing the clumps in autumn or in spring. The most popular sort is *Catananche coerulea*.

Centranthus (Valerian). The Common Valerian (*Centranthus ruber*) is often seen growing wild on walls in the western counties. The variety *coccineus* is of better colouring, rose red. It is a hardy herbaceous perennial, but as the old plants become straggling and untidy it is best to destroy them and plant a few of the self-sown seedlings which spring up in great numbers.

Cheiranthus (Wallflower). Invaluable in the spring flower garden. Although the Wallflower is classed as a perennial and, on light land, may be worth keeping for a second year, generally the best display is obtained by raising the plants annually from seeds sown out of doors on a seed border in May. The seedlings must be transplanted to give them more room, and be planted in October where they are to bloom. There are innumerable varieties, chiefly of crimson, yellow, buff and purplish colouring. The Siberian Wallflower (*Cheiranthus Allionii*) is one of the most brilliant of all spring-flowering plants; it grows 15 inches or so high, bears flowers of intense orange yellow colour, and remains in bloom until early summer. It is grown in the same way as other Wallflowers.

Chrysanthemum. The border Chrysanthemum is a hardy perennial; it is apt, however, to die off in winter when planted in heavy soil. It is wise to lift the clumps of favourite varieties in autumn and place them in boxes of soil in a cold greenhouse for the winter, or

to plant them in a bed of soil in a frame. These plants may be increased easily in February and March by making cuttings of the young shoots that develop at the base of the old plants; they can often be detached with a few roots, and if placed in pots of sandy soil in a frame they will soon become established. The time to plant them out of doors is in late April or early May. If it is impossible to place the roots under cover for the winter a covering of ashes over them will usually provide sufficient protection. Slugs often ruin the young shoots unless they are kept away by a scattering of old sifted ashes. Catalogues contain lists of innumerable varieties of border Chrysanthemums which bloom from early September until late October. The late-flowering varieties can be lifted, if necessary, placed in pots of soil, and brought into the greenhouse, where their blooms will open perfectly.

The Shasta Daisy is a vigorous, hardy, herbaceous perennial that bears large white daisy-like flowers in summer throughout many weeks. It is an indispensable border plant, spreads quickly into large clumps, and is easily increased by separating the plants into pieces in autumn or spring; the pieces should be replanted in the flower border. Mrs. Lowthian Bell and King Edward are two of the finest varieties; they have large flowers on tall stiff stems.

Convallaria (Lily of the Valley). The conditions that suit this favourite flower best are partial shade and deep moist soil. Ordinary soil can be made suitable by digging it 18 inches or so deep and adding well-decayed manure and leaf-mould. October is the best

time to plant the roots; these should be put in the ground singly at 4 inches apart, the tops being covered with an inch or so of soil. A covering of leaf-mould or well-decayed manure on the bed each autumn is beneficial. Fontin's variety has the largest flowers.

Cortaderia (Pampas Grass). This imposing plant is familiar to everyone and is seen at its best in an isolated position on the lawn. It does best in a sheltered position and in deeply dug and well-manured soil. The old leaves should be trimmed off in spring, not before, as they afford valuable protection to the plants in winter. The tall, whitish flower plumes appear in late summer and are very handsome. The common kind is *Cortaderia argentea* (*Gynerium argenteum*). One named *Rendlaterii* has plumes of pinkish shade.

Delphinium (Larkspur). No one who has a garden needs an introduction to the *Delphinium* or perennial Larkspur; its tall spires of blue, purple, or mauve blooms in June are familiar to all. It is perhaps the noblest of the flowering plants of early summer. There is nothing difficult about its cultivation; it must have deeply dug and manured soil, and be left undisturbed for several years so that it may have the chance to develop into a large and handsome clump. The plants may be put in the ground in early autumn or in spring. Slugs often ruin the young shoots as they push through the soil, but if old sifted ashes are used freely little harm will be done.

It is wise to leave a *Delphinium* alone so long as it continues to do well, but if the clumps become weakly they should be taken up in

autumn, separated into small pieces, each with roots attached, choosing those from the outside of the plant and discarding the central portions : it is advisable to pot up the pieces, keep them in a cold frame for the winter, and plant out in spring. Cuttings can also be made from the young shoots in spring ; they should be placed in pots of sandy soil in a frame kept closed.

Delphiniums are easily raised from seed sown in a box of soil in April. The seedlings must be transplanted to other boxes or a bed of soil before they become crowded, and may be planted out in autumn ; they will bloom the following year. There are many named varieties.

The annual Larkspurs are very attractive plants. Seeds may be sown out of doors where the plants are to bloom in summer, but the finest results are obtained by sowing in boxes in soil in September, keeping the seedlings in a frame for the winter and planting out in spring.

Dianthus (Pink). Pinks are indispensable flowers, both for the flower border and the rockery ; they vary greatly in manner and vigour of growth and in the colour of the flowers. Some of them are fragrant, though unfortunately all are not. Most kinds, especially the single and semi-double rock and border Pinks, are easily grown from seeds sown in a box of soil in spring. If they can be raised in a frame or greenhouse, so much the better, but they will germinate out of doors if sown in April ; it is better to sow in a box of soil than in the open garden.

The plants will be large enough to plant out permanently in September and will bloom the following

year. They are also increased by means of cuttings taken in June and inserted in sandy soil beneath a handlight or cloche. Pinks thrive best in well-drained, rather light soil. On heavy land they are liable to get straggling and weakly unless sand and leaf-mould are added freely before planting.

The old double white fragrant Pink, Mrs. Sinkins, is still a great favourite ; it makes a beautiful edging. When it gets straggling and untidy the plants should be taken up in September, pulled to pieces and replanted. Meanwhile the soil should be dug over and such material as sand, leaf-mould, and brick or mortar rubble added if the ground is at all clayey.

The perpetual flowering Allwoodii Pinks are very beautiful, and bloom more or less throughout the summer and early autumn. There are now many varieties with semi-double and double flowers. One of the best of the latter is named Harold ; it has large double white blooms. These perpetual flowering Pinks are increased by cuttings in summer, or long shoots can be layered. The Herbertii Pinks are remarkable for the perfect form and delightful colouring of the flowers ; they are increased by cuttings. The Pritchardii Pinks are easily raised from seed sown in spring or early summer to provide flowering plants the following year ; they are single and of various colours.

The low-growing tufted rock-garden Pinks are delightful little plants. One of the most generally useful is the Cheddar Pink (*Dianthus caesius*) ; it forms a compact tuft of grey-green leaves and in early summer becomes smothered with rose-pink blooms. It is easily

raised from seeds or by cuttings taken after the flowers have faded. *Dianthus graniticus*, deep rose ; *fragrans*, white ; and *neglectus*, the glacier Pink, are other kinds for the rock garden. The last named is tiny, and needs careful cultivation in gritty soil. In addition to all these there are many named varieties of border Pinks to be found in the catalogues of nurserymen who specialise in these plants.

The Chinese or Indian Pinks have showy fringed flowers in summer, and are often used for planting in flower-beds. They are raised from seeds every year by sowing out of doors or in boxes of soil in July, the plants being put out permanently in spring.

The Border Carnation (*Dianthus Caryophyllus*) is a splendid garden flower now represented by innumerable varieties. It needs deeply dug soil with which, if heavy, some leaf-mould, sand, wood ash, and mortar rubble should be mixed. Like the Pink, it seems happiest in rather light land, but it will grow anywhere if the soil is made suitable. Planting should be done in September or early October. It is advisable to raise the Carnation bed a few inches above the ground level when the soil is clayey ; that prevents the loss of the plants in winter from excessive damp. In cold and exposed gardens the plants are often kept in a frame for the winter and planted in spring.

Border Carnations are increased by layering the shoots in July ; some of the best shoots are chosen, the lowest leaves are removed, the stem is slit half-way through, pegged into the ground, and covered with a compost of loam,

leaf-mould, and sand. It is also advisable to mix some of the latter in the ground beneath the layers so that they can be transplanted without damage to the roots in October. The plants should be set at about 15 inches apart ; they must be staked as soon as the flower stems begin to rise, and the soil ought to be hoed frequently during the summer months. Border Carnations are seen at their best only when they are left undisturbed for two, three, or even four years ; then they make large clumps and blossom freely.

The Sweet William (*Dianthus barbatus*) has long been a great favourite with amateur gardeners. It is now more valuable than ever because new and improved varieties of brilliant and pleasing colours have been introduced. The two best are Scarlet Beauty and Pink Beauty. The auricula-flowered type contains flowers of many colours, including crimson, rose, white, and others variously marked. Sweet Williams are at their best in June ; it is not worth while keeping them after they have once flowered. Better displays are obtained by raising the plants from seed sown in May and June on a prepared seed bed out of doors ; the seedlings are once transplanted in summer to give them more room and are finally planted in October.

Dicentra (Lyre Flower or Bleeding Heart). An old favourite hardy herbaceous perennial with graceful, deeply cut leaves and drooping pink and white flowers in May. It thrives in ordinary soil and likes a half shady place ; it will succeed in a shady border. This is a useful plant to pot in autumn and bring into the un-

heated greenhouse. The way to increase the *Dicentra* is to take up the thick roots in early autumn and separate them. Another name for this flower is *Dielytra spectabilis*.

Dictamnus (Burning Bush). The popular name "Burning Bush" is given to this plant because it gives off a volatile oil in the evening of a hot dry day, and if a match is held just over the plant a bluish flame can often be seen. It thrives in ordinary soil, grows 2 feet or so high, and bears reddish-purple flowers in summer. Planting may be done in autumn or spring. The plants are increased by lifting and separating the thick roots in spring.

Doronicum (Leopard's Bane). A hardy herbaceous perennial that grows 2 to 3 feet high and bears large yellow daisy-like flowers in April. It is very easily grown, and will thrive on a shady border. The best variety is one named *Harpur Crewe (excelsum)*; it has unusually large blooms. This plant can be increased by division in autumn.

Echinops (Globe Thistle). Good border plants that are easily grown in ordinary soil and are increased by division in autumn or by root cuttings taken then and placed in boxes of sandy soil in a frame for the winter. The commonest is *Echinops Ritro*, which has blue thistle-like flower heads; it reaches a height of about 4 feet.

Erigeron (Summer Starwort). The summer Starworts are splendid hardy border plants that come up year after year and provide a show of bloom for many weeks together. They are easily grown in ordinary soil, and may be planted in autumn or in spring. They reach a height of 2 to 3 feet, and the aster-

like flowers are chiefly lavender-mauve shade. The best are *speciosus superbus*, lavender blue; *Quakeress*, lavender; *Asa Gray*, yellowish; and *B. Ladhams*, rose pink. They are easily increased by detaching rooted pieces from the clumps and replanting them in spring, or by sowing seeds in a box of soil in a frame in spring to provide flowering plants for the following year.

Eryngium (Sea Holly). The Sea Hollies are handsome summer-flowering hardy herbaceous perennials. They thrive best on well-drained land, though heavy clayey ground can be made suitable by adding leaf-mould, sand, wood ashes, and old potting soil. The plants grow from 3 to 4 feet high, and bear somewhat thistle-like flower heads, most of which are of bluish colourings; the leaves also are more or less bluish in tone. Some of the finest are *alpinum*, *amethystinum*, and *Oliverianum*. The way to increase them is to take up the clumps in autumn, separating them into pieces and replanting these.

Funkia (Plantain Lily). These plants are grown both for the sake of their large ornamental leaves and for their flowers. They are hardy and may be planted out of doors in autumn or spring; they are often grown in large flower-pots or tubs, and placed on terraces and balconies for the summer months. They thrive in ordinary soil that has been deeply dug; if it is heavy, leaf-mould ought to be added freely. Snails are very fond of the *Funkia*, and will ruin the leaves if not destroyed. The plants can be increased by separating them into pieces in spring. Some of the best

sorts are glauca, which has blue-green leaves; ovata, handsome leaves and lilac-coloured flowers; ovata aurea, yellowish leaves; subcordata, large leaves and fragrant white flowers; Sieboldiana, cream-white fragrant blooms. The plants grow 18 inches or so high, and are in bloom in summer.

Gaillardia (Blanket Flower). Very showy flowering plants classed as hardy perennials, but usually short-lived in heavy ground. They grow 2 feet or so in height, and bear large, brilliantly coloured blooms in summer. Propagation is by means of cuttings inserted in boxes of sandy soil in a frame in August, or by sowing seeds in a warm glasshouse in January; seedlings raised in this way will bloom the same year. Those not possessing a heated glasshouse may sow the seeds out of doors or in a frame in May to provide flowering plants the following year. On light, well-drained land the Gaillardias are longer lived, and may be left undisturbed while they are satisfactory. Usually, however, it is advisable to raise a fresh supply every two years. There are several named varieties; they are chiefly of scarlet, crimson, and yellow colouring. The annual varieties of Gaillardia are treated as half-hardy annuals, and are raised from seeds sown under glass in March.

Galega (Goat's Rue or French Lilac). Vigorous and rather rampant hardy herbaceous perennials that bear a profusion of small, pea-shaped lavender-blue blossoms in summer. They thrive in ordinary soil and soon make big plants. They are increased by division in autumn. Galega Hartlandii is one of the best.

Geum (Avens). Showy, easily grown and indispensable hardy flowering plants for amateurs; they begin to flower in May and continue attractive for many weeks if the old blooms are cut off. They thrive in ordinary soil, and are easily increased by seeds sown in a box of sandy soil placed out of doors in early summer; the seedlings will bloom the following year. Geum coccineum has small red flowers, but the large-flowered scarlet variety, Mrs. Bradshaw, is more popular. A handsome yellow-flowered variety, equally good, is named Lady Stratheden.

Gypsophila (Chalk Plant). A great favourite; its sprays of small white flowers are in great demand for decorative purposes. The plant is a hardy herbaceous perennial with large thick roots which, when once planted, should be left undisturbed for years; they will then furnish large masses of bloom. Deeply dug and manured soil is desirable, though the manure ought to be buried a foot down; the top of the root must be covered with an inch or two of soil. It is an advantage to add lime freely to the ground for this plant. The roots may be planted in autumn or in spring. Gypsophila paniculata is the common kind; the double white variety, which has small rosette-like blooms, is very attractive.

Helenium (Sneezewort). Vigorous herbaceous perennials, hardy and indispensable in the flower border. They thrive in ordinary soil and bloom in July and later. They are easily increased by separating the clumps in autumn or in spring. The following are some of the best: Riverton Gem,

crimson brown, and Riverton Beauty, yellow, both about 5 feet high; *pumilum magnificum*, golden yellow, 2 feet, and Crimson Beauty, crimson brown, 3 feet.

Helianthus (Sunflower). The perennial Sunflowers are tall, vigorous, hardy plants, most of which spread quickly by means of their underground runners or stems; therefore a few of them only are needed in most gardens. They can be increased to any extent in autumn or summer by taking rooted pieces off the old plants. They thrive in even the poorest soil. A few of the best are Miss Mellish, *mollis*, *decapetalus*, *orgyalis*, *cucumerifolius*, and *multiflorus maximus*.

The annual Sunflowers are grown from seeds sown out of doors in the spring where the plants are to bloom. The commonest is the giant variety with enormous blooms so familiar in cottage gardens, but others with smaller flowers are to be preferred.

Hemerocallis (Day Lily). Hardy plants that grow 2 to 3 feet high, have long and narrow leaves, and bear lily-like flowers in summer; the individual blooms do not last long, but a succession is maintained for many weeks. Although these plants will thrive in the sunshine, they are also suitable for the shady border. They thrive in ordinary soil and are increased by dividing the tufts in autumn or spring. A few of the best are Apricot, orange-apricot, Queen of May, *aurantiaca major*, *flava* and *fulva*; the flowers are of yellow or orange-yellow colouring.

Heuchera (Alum Root). Delightful hardy plants that are at their

best in early summer. They form a tuft of leaves which in many sorts are prettily marbled, and the graceful, slender stems bearing small flowers in various shades of rose and crimson make a charming display. They thrive in ordinary soil, though preferring that which is well drained and rather light; leaf-mould and grit or sand should be mixed with heavy soil before planting, which may be done in autumn or in spring. Propagation is effected by dividing the plants in spring. There are now many named varieties, some of them of great beauty. A few of the finest are Edge Hall, rose; Pluie de Feu, red; Rosamunde, rose pink; Flambeau, coral; Rose Queen, rose; tiarelloides, blush; and sanguinea, bright red.

Iris. The bearded Flag Irises are great favourites in amateurs' gardens; they have increased in popularity considerably during late years because of the numerous new and beautiful varieties which



The bearded Flag Iris.

have been raised. Their grey-green leaves and richly coloured flowers on tall stems form the chief ornament of the flower garden in May and June. The best time to plant is from June to September ; if put in then they are likely to bloom the following summer. If, however, planting is deferred until spring, few flowers can be expected the first summer. They thrive best in well-dug ground which has been limed freely. The rhizome or root-stock must not be planted deeply ; the top should be scarcely covered with soil. An application of superphosphate of lime every year in spring, 2 ounces per square yard of ground, is very beneficial.

The common purple Flag is most familiar, and is indeed to be seen in almost every garden. Although it prefers a sunny spot, and there blooms most freely, it also does fairly well in shade. The better sorts ought to be planted in a sunny position. Some of the finest of the May-flowering Flag Irises are Florentina, cream white ; the common purple ; Kharput, mauve and purple ; Odin, white and lavender ; Prince Victor, lavender and purple ; and Zwanenberg, bronze and old gold. Of those that bloom in June the following are very handsome : Mrs. Darwin, white and violet ; Rhein Nixe, crimson, purple and white ; Alcazar, mauve, purple and bronze ; Archevêque, light and dark purple ; Albert Victor, lavender blue ; Dalmatica, lavender blue ; Leonidas, lavender and purple ; Lord of June, lavender blue ; Standard Bearer, crimson rose ; Madame Chereau, white and blue ; and Eldorado, bronze, purple and other shades. There are numerous others.

Kniphofia (Red Hot Poker).

Flowering plants that thrive best in well-drained ground and reach a height of from 2 to 5 feet. They are not usually so successful on heavy, clayey soil. Although they are considered hardy, it is wise to protect them in severe weather by placing leaves round about the base of the plants. The shabby leaves ought not to be cut off until spring. Planting is best done in March-April, and propagation is effected by dividing the clumps then. A few of the finest sorts are aloides, the common orange-red, 4 to 5 feet ; Macowani, light red, 2 feet ; Nelsoni, yellow, 2 to 3 feet ; and Tuckii, yellow and red, 4 feet. Many varieties are described in catalogues.

Linum (Flax). Among the Flaxes are some of our loveliest and daintest blue flowers ; the best of this colour are *Linum narbonense*, *L. perenne* and *L. sibiricum*. They are of very slender growth and flower in summer ; the blossoms are short-lived, but others continue to open for many weeks. The plants should be trimmed back in spring if they are straggling. *Linum arboreum* makes a little bush and bears yellow flowers ; it may be increased by cuttings taken in summer or, like the others, from seeds sown in spring. The finest of the annual Flaxes is the scarlet *Linum grandiflorum rubrum* ; this makes a brilliant display ; seeds are sown in March or April where the plants are to be grown.

Lupinus (Lupin). The Lupin (*Lupinus polyphyllus*) is a favourite hardy herbaceous perennial that reaches a height of 3 to 4 feet, thrives in ordinary, well-cultivated ground, and bears flowers,

greatly varied in colour, in early summer. During recent years many handsome new Lupins have been raised, and the flowers now range from white through pale to deep yellow, through lavender to purple, and through pale rose to crimson. Lupins are easily raised from seeds sown out of doors or in a box of soil in early summer. The seedlings must be transplanted to a reserve border when 2 or 3 inches high and put out finally in autumn; they will flower the following year. It is not wise to disturb the old plants; when they are past their best they should be replaced by seedlings.

Annual Lupins are raised from seeds sown out of doors in spring where the plants are to bloom; they reach a height of 15 inches to 2 feet, and are of various colours. One of the prettiest is *atrococcineus*, which has crimson and white flowers.

The tree Lupin, with yellow or white flowers, is a beautiful shrubby plant especially suitable for light soil, though it will also grow on heavy land if this is made suitable by adding grit, leaf-mould, and sand. The branches are often damaged by frost in winter, but if they are cut back in spring they usually start into growth freely; in fact, it is wise to shorten them in spring whether they are damaged or not.

Lychnis (Campion). Among the hardy perennial Campions the most popular is *Lychnis chalcedonica*, the Jerusalem Cross, which grows 3 or 4 feet high and bears heads of scarlet bloom in summer. It thrives in ordinary soil and is increased by dividing the plants in autumn or in spring. *Lychnis Haageana* has

flowers of various colours: scarlet, rose, and so on. The plants grow 12 to 15 inches high, and are at their best in light soil. *Lychnis Viscaria splendens* is a showy plant with bright rose-red blooms in summer. The Campions are increased by dividing the plants in autumn or spring.

Lythrum (Loosestrife). A variety of *Lythrum virgatum* named *Rose Queen* is a valuable border plant; it reaches a height of 2 to 3 feet and in summer bears a profusion of spikes of rose-purple flowers that are very showy. It thrives in ordinary soil, and is easily increased by dividing the roots in autumn.

Monarda didyma (Bee Balm). This is an old-fashioned plant which forms a low spreading mass of fragrant leaves and in summer bears red flowers in whorls on stems 18 inches to 2 feet high. The variety *Cambridge Scarlet* has flowers of brighter colour. The plant thrives in ordinary soil, and may be planted in autumn or in spring, and is easily increased by detaching pieces in spring and replanting them.

Myosotis (Forget-me-not). Invaluable flowers for spring and early summer, favourites in every garden. They are much used as a groundwork in spring flower-beds planted with Wallflower and spring bulbs. They are raised from seeds sown out of doors in May on a seed bed, the seedlings being transplanted once and finally planted out in October. As a rule innumerable self-sown seedlings spring up in a garden. There are several named garden varieties, of which *Royal Blue* is one of the best; it bears bright blue flowers.

Nepeta (Catmint). The mauve Catmint (*Nepeta Mussini*) is one of the most popular of plants; it has grey leaves, grows 2 feet or so high, and bears a profusion of lavender-mauve blossoms for weeks together in summer. It makes an admirable edging to a large flower border or may be grouped almost anywhere to advantage. The plants are put in the ground in autumn or in spring. They are very easily increased by cuttings at any time in summer. If these are placed in pots or boxes of sandy soil in a frame they soon form roots, and when they are nicely rooted they can be planted where they are to remain.

Nymphaea (Water Lily). The presence of a pool adds largely to the charm of the summer garden, especially when it contains a few Water Lilies. These are not difficult to grow provided they are planted in a pond that is exposed to the sunshine and not in running water, which is too cold for their well-being. The best time to plant is in April, and the way to do it is to put each Water Lily in a basket of soil and weight it with stones so that it will sink to the bottom of the pond. For small pools the less vigorous varieties should be chosen, such, for instance, as *Ellisiana*, *Laydekeri fulgens*, and *Laydekeri rosea*. These will thrive in from 12 to 15 inches of water. Some of the best of those suitable for planting in 3 feet of water are *Colossea*, *James Brydon*, *marliacea chromotella*, *Robinsoniana*, and *W. Falconer*. Water Lilies can be grown in tubs, and if these are sunk in the ground they make very attractive objects in summer. The best varieties for this purpose are

pygmæa, white, and *pygmæa helveola*, yellow.

Oenothera (Evening Primrose). The common Evening Primrose (*Oenothera biennis*) soon becomes a weed in gardens, for it seeds itself on the beds and borders, and even the paths. A beginning can be made by sowing a few seeds in May and transplanting the seedlings, when large enough, to the place where they are to remain. In subsequent years, self-sown seedlings should be transplanted as is necessary. One of the most attractive of the Evening Primroses is named *Fraseri*; it has reddish stems, dark green leaves and bright yellow flowers; it reaches a height of 3 feet and blooms for many weeks in summer; it is perennial and comes up year after year. *Oenothera fruticosa major*, yellow, and *speciosa*, white, are other good ones. *Oenothera missouriensis* is a trailing plant bearing yellow flowers in summer; it should be planted in sandy soil and a sunny position in the rock garden.

Pæonia (Pæony). The Pæonies are noble garden plants that are at their best in early summer. There are two types, the tree Pæony and the herbaceous Pæony. The latter is the favourite, and when well established it furnishes a splendid display of bloom in early summer. Planting may be done in spring or early autumn, September being the best time. Deeply dug and manured soil is essential if they are to do really well, and they must be left undisturbed for many years. As a rule they do not make much of a show for a year or two, thus really well cultivated ground is necessary. If, in the course of time, the clumps become crowded

and have to be separated, the best month in which to do the work is September. The roots should be covered with 2 to 3 inches of soil. A top dressing of manure on the soil round about them in spring is beneficial.

Innumerable varieties, both double and single, are now described in nurserymen's catalogues, and their range of colour is remarkable; but several of the species or wild types from which the garden varieties have been evolved are well worth planting. Perhaps the most handsome of all is *officinalis*; this is one of the most satisfactory, and a well-grown plant makes a first-rate display when its crimson blooms are in full beauty.

The tree *Pæonies* are scarcely to be recommended for the average amateur's garden. Although they are hardy and may be planted out of doors, they begin to grow early in spring and the shoots may be, and often are, damaged by frost, the flower display being then spoilt. They ought to be placed in a border that is not exposed to the morning sunshine, for if this reaches them after a frosty night they will be damaged. Tree *Pæonies* need deeply dug soil, and if it is heavy, leaf-mould and grit should be added freely.

Papaver (Poppy). Both perennial and annual Poppies are favourite garden flowers. The former grow into large and rather untidy clumps, and in May and June they produce immense flowers of scarlet, crimson, rose, and other colours that provide a brilliant display; the scarlet varieties are particularly fine. The roots should be planted in autumn in ordinary

soil that has been well dug and manured. These large-flowered perennial Poppies are varieties of *Papaver orientale*. As they are rather untidy and straggling after the blooms are over it is wise to have later-flowering plants in front of them in the herbaceous border so that they will not interfere with the general display.

Pentstemon. The large-flowered varieties of *Pentstemon* are invaluable border plants for August and September; the blooms are of various showy colours, and for several weeks they provide a most attractive display. Catalogues describe numerous varieties, which increase in number annually. These *Pentstemons* are not really hardy in most gardens or, at all events, a far better result is obtained by treating them as annuals and raising them from cuttings every year. The cuttings are taken in September and inserted in pots of sandy soil in a frame. There they may remain throughout the winter if the frame is covered with mats in severe weather. In spring they should, if possible, be repotted singly in flower pots to give them every chance, and finally be planted out of doors in May. If, however, the cuttings are put at 2 or 3 inches apart they may remain undisturbed until they are planted out of doors. Old plants that are left outside and come through the winter safely should be cut back in spring, otherwise they will be very ungainly and straggling.

Although the large-flowered varieties are most popular, a good word must be said for those that have rather small flowers, such as *Newbury Gem*, *Myddelton Gem*, and *Southgate Gem*; the flowers are

chiefly of rose-pink shade ; they are very attractive plants and need the same treatment as the large-flowered sorts.

Pentstemon barbatus is a splendid hardy border plant that bears coral-red flowers on tall stems 3 feet high in summer ; it makes a delightful show. On heavy land it is liable to die off in winter, and it is worth while lifting and potting the plants and keeping them in a frame for the winter or separating them in September and repotting the pieces. A stock can also be raised from seeds sown under glass in a frame in spring to provide flowering plants the following year. *Pentstemon heterophyllus* is a charming plant with mauve-blue flowers suitable for a well-drained soil and sunny spot on the rockery.

Phlox. One of the most valuable hardy border plants ; it is at its best late in July and in August, reaches a height of 3 to 4 feet, and makes a most showy display. There are now many handsome varieties in a wide range of colour. The Phlox thrives best in a position that is shaded from the midday sun, and needs deeply dug and manured soil ; it is not happy in a dry, hot position ; cool, moist conditions suit it best, and for that reason it is often seen in finer condition in northern than in southern gardens. Planting may be done in autumn or in spring.

The way to increase the Phlox is to take up the clumps in autumn or early spring, detach small rooted pieces, pot them and keep them in a frame until they are well rooted, when they may be planted out of doors. Each plant will bear one large head of bloom in late summer

if planted in good soil ; in fact, such plants provide the finest flowers, though, of course, not in such abundance as established clumps. In the course of a year or two the Phlox, if left undisturbed, and mulched with manure in early summer, will make a splendid show. A few of the finest varieties are : Elizabeth Campbell, salmon ; Le Mahdi, violet-purple ; Frau A. Buchner, white ; Coquelicot, orange red ; Tapis Blanc, white ; and Eugène Danzanvilliers, lilac and white. Innumerable others are described in catalogues.

The Phloxes commonly grown in the rock garden form low-spreading tufts which in spring are smothered in flowers of various colours and make a delightful show. They are not at all difficult if planted in a slightly shaded position and in well-drained soil with which leaf-mould and sand have been mixed ; on heavy soil they are not so successful. They are increased by cuttings taken as soon as the flowers are over and inserted in pots of sandy soil in a frame. Beautiful sorts are Setacea, the common Moss Pink, rose ; Nelsoni, white ; G. F. Wilson, mauve ; Vivid, rose.

Physalis (Chinese Lantern or Winter Cherry). This hardy herbaceous perennial is grown for the sake of its enlarged orange-coloured calyces, which are of distinct and striking appearance and commonly known as "Chinese lanterns." The plant is not difficult to grow in a sunny position and in well-drained soil. It should be planted in autumn or in spring. Propagation is effected by taking up the roots in spring, separating them, and replanting the pieces.

Physalis may also be increased by seeds sown in a frame in spring. The two best sorts are *Physalis Franchetii* and *P. Bunyardii*.

Polemonium (Jacob's Ladder). An easily grown and attractive border plant; it thrives in ordinary soil and is increased by sowing seeds on a seed bed out of doors in early summer. It blooms in June and July and the flowers are blue or white. *Polemonium caeruleum*, light blue, and its white variety, *alba*, are favourites; but *P. himalayanum*, which grows 2 feet high and has flowers of violet-blue shade, is finer. This plant seeds itself very freely, and the seedlings can be lifted and planted where they are to bloom.

Potentilla (Cinquefoil). Easily grown hardy plants that bear strawberry-like flowers of various colours in summer. They thrive in ordinary soil and are increased by sowing seeds in a box of soil in a frame in spring to provide plants that will bloom the following year. They reach a height of from 6 to 15 inches. One, named *W. Rollison*, scarlet and orange, is particularly showy; other attractive ones are *Gibson's Scarlet* and *Miss Willmott*, rose pink; the individual flowers do not last long, but a succession is produced for many weeks.

Pyrethrum. Everyone is familiar with the *Pyrethrum*, which grows 2 to 3 feet high and bears large, daisy-like flowers of various bright colours in early summer. It thrives best in well-drained soil; on heavy ground that gets sodden in winter it is apt to die off. The plants may be set out in autumn in fairly light ground; in heavy soil it is better to defer planting until

spring. Deeply dug and manured soil is necessary to give the best results. The *Pyrethrums* are increased by division in spring or by sowing seeds in boxes of sandy soil in a frame at that season to provide plants that will bloom the following year. The named double and single varieties provide the best flowers, however, and these must be increased by division. The catalogues describe many varieties; a few of the best are *Aphrodite*, white, and *Captain Nares*, crimson (both double), and the following (single flowered): *A. M. Kelway*, rose; *James Kelway*, scarlet; and *Mrs. Bateman Brown*, crimson.

Rudbeckia (Coneflower). Vigorous hardy border perennials which bear yellow flowers with a prominent raised central disc in late summer. They thrive in ordinary soil and may be increased by lifting and separating the clumps in autumn or in spring. The best of the low-growing sorts is *Rudbeckia Newmanni (speciosa)*, which reaches a height of 2 feet. *Golden Glow* grows 5 to 7 feet high and has handsome double flowers.

Salvia (Sage). Some of the *Salvias* are hardy, others are half hardy. Of the hardy kinds the most valuable for the amateur's garden is the purple Sage, *Salvia virgata nemorosa*; this reaches a height of 3 feet or so and soon develops into a good-sized clump; in summer it bears a profusion of small violet-blue flowers that make a handsome display. It is easily increased by dividing the clumps in autumn or in spring.

Scabiosa (Scabious). The favourite perennial *Scabious* is *Scabiosa caucasica*, a plant reaching a height of about 2 feet when

in bloom and bearing numerous long-stalked lavender-coloured flowers in summer. In recent years flowers of other shades have been introduced; they vary in colour from white to deep lavender-blue. This plant is happiest on well-drained soil; on heavy ground it is not a good perennial, for it is apt to die out in winter. When such conditions prevail it is better, therefore, to treat the plant as a biennial and to raise it from seeds sown each year in a box of soil in a cold frame in June. The seedlings may be planted out of doors for the summer months, but if the ground gets very sodden in winter it is better to pot them up again and keep them in a cold greenhouse for the winter, planting finally in spring. Those whose gardens are on light soil may treat this Scabious as an ordinary perennial and divide the clumps in September if it is wished to increase them. A giant plant with yellow flowers is *Scabiosa lutea*; it provides a handsome display in the herbaceous border in summer and is easily grown; it reaches a height of 5 feet or so.

The annual Scabious are delightful flowering plants for the summer. They are usually grown from seeds sown in a slightly heated glasshouse in spring, the seedlings being planted out of doors in May; but those who have an unheated greenhouse will find that by sowing seed in September, keeping the seedlings under glass until April, they can obtain even finer plants. When grown in one of these ways the annual Scabious reaches a height of from 3 to 4 feet and bears its pin-cushion-like flowers of various colours from July until September; it is one of the best of the annuals

providing it is allowed as long a season of growth as possible.

Sidalcea (Grecian Mallow). The Grecian Mallow (*Sidalcea candida*) is now represented by many showy varieties and a selection is well worth planting in the herbaceous border; they reach a height of 3 to 4 feet and bear mallow-like blooms of white, rose and crimson in the summer months. The flowers of *Sidalcea candida* are white and those of *S. Listeri* are rose-coloured, but cross-bred seedlings have been raised that provide far greater variety of colour. These Mallows are easily grown in ordinary, well-tilled soil and may be increased by dividing the old plants in September or by sowing seeds in a box of soil in a frame in spring.

Sisyrinchium (Satin Flower). The Satin Flowers are not often seen in amateurs' gardens, yet one of them, at all events, *Sisyrinchium grandiflorum*, ought certainly to be planted. It is of slender growth, reaches a height of 12 inches or so, and bears purple flowers in early summer. It thrives best in a sunny place and in well-drained loamy soil; if the ground is heavy, leaf-mould and sand ought to be mixed with it freely. *Sisyrinchium Bermudianum* grows 12 inches high and has blue flowers in early summer. A taller and more vigorous plant, just as attractive as the others mentioned, is *Sisyrinchium striatum*, which has light yellow flowers in June. All these dainty hardy plants thrive best in well-drained soil. If the ground is heavy leaf-mould and sand should be added. They may be increased by dividing the tufts in early autumn or in spring, and replanting the pieces.

Solidago (Golden Rod). The Golden Rods are vigorous border plants that bear yellow flowers in late summer and early autumn and are useful and showy at that season of the year. They thrive in ordinary soil that has been well dug and manured, and may be planted in autumn or in spring. They are easily increased by dividing the clumps in October and replanting the outer pieces. Some of the best of the Golden Rods are the following: *canadensis*, 4 feet; *Golden Wings*, 5 feet; and *Shortii*, 5 feet.

Spiræa. The hardy herbaceous *Spiræas* are handsome flowering plants for the flower border or the streamside; they must have moist soil and if planted in the flower border the ground should be dug deeply and manured before they are put in. They need to be watered freely in hot, dry weather in summer. These *Spiræas* are easily increased by lifting and separating the clumps in early autumn. The commonest is *Spiræa aruncus* or Goat's Beard, a vigorous plant that reaches a height of 5 feet or more and bears large plumes of cream-white flowers in summer, when it makes an imposing display. *Spiræa japonica*, white, about 2 feet high, is a favourite kind, especially for potting in autumn and forcing into early bloom under glass. *Spiræa filipendula* and *S. Ulmaria*, the Meadow Sweet, are other attractive sorts with white flowers. The *Astilbe* resembles the *Spiræa* closely and is often grown under this name; there are many beautiful and highly-coloured varieties which are referred to under the title of *Astilbe*.

Statice (Sea Lavender). There are perennial and annual Sea

Lavenders, each section containing plants that are of value in the garden. The most important of the perennial kinds is *Statice latifolia*, a vigorous plant that has large leaves and bears panicles of numerous small lavender blue flowers in late summer. It is easily grown in well-drained border soil in a sunny place; if the ground is heavy it should be made suitable by adding sand and leaf-mould; the plant reaches a height of 2 feet or so, and when well established it is very attractive. A smaller plant, *Statice Gmelini*, bears purplish flowers in July and August; this also needs well-drained soil and a sunny place.

Thalictrum (Meadow Rue). There are several very handsome hardy border plants among the Meadow Rues, and one or two of them ought to be grown in every garden. Most of them are easily grown in ordinary well-drained soil; in heavy ground they are not so happy, and leaf-mould and sand should be added to render it more suitable. They are increased by lifting and dividing the plants in early autumn or by sowing seeds in a box of soil in a frame in spring. *Thalictrum aquilegifolium* is one of the most familiar; it reaches a height of about 3 feet, has handsome deeply-cut leaves and bears light purplish flowers; the variety *atropurpureum* is even more handsome, having flowers of deeper colour.

Thalictrum glaucum, which reaches a height of 5 feet, has grey-green leaves and yellow flowers. *Thalictrum dipterocarpum* is one of the most beautiful; it is tall, reaching 5 feet high, of graceful growth and bears panicles of small

lilac-lavender blooms. *Thalictrum adiantifolium* is commonly called the "maiden-hair plant," because of the resemblance of its attractive leaves to those of the maiden-hair fern; it is, in fact, grown for the sake of its leaves, which are so useful for cutting and mixing with flowers in vases. It is a plant of low growth; so, too, is *Thalictrum minus*, which also has pretty little leaves.

Trollius (Globe Flower). The Globe Flowers are ideal for the amateur's garden; they are vigorous, hardy herbaceous perennials that bear showy, somewhat globe-shaped orange or yellow flowers in early summer. They are first-rate plants for the shady border, although they will thrive in the sunshine provided they are planted in deep, moist soil. Their cultivation is perfectly easy in ordinary soil that does not dry out in summer; it is a good plan to add leaf-mould freely and to water them copiously in dry weather. Planting may be done in autumn or in spring and propagation is effected by lifting and dividing the plants in early autumn. The two commonest are *Trollius europæus*, 15 inches high, with yellow flowers, and *T. asiaticus*, about the same height, with blooms of orange-yellow colouring. A variety of the former named Golden Globe is one of the finest of all.

Verbascum (Mullein). The Mulleins are handsome summer flowering hardy plants, some of which ought certainly to be represented in amateurs' gardens. A few of them are perennial, but most are biennials—that is to say they have to be raised fresh from seeds every summer for the old plants perish

after having flowered. Most of them have large handsome leaves and in summer produce tall, imposing spikes, chiefly of yellow flowers. They thrive in ordinary soil. The biennials are grown from seeds and the perennials are increased by lifting and separating the clumps in early autumn. The best perennial kinds are *Chaixii*, 3 feet, yellow; *nigrum*, 3 feet, yellow, and *phoeniceum*, 3 feet, with flowers of various shades of colour. The following are the most handsome of the biennial kinds: *longifolium*, 4 feet, yellow; *olympicum*, 5 or 6 feet, yellow; and *Thapsus*, 5 or 6 feet, yellow.

Veronica (Speedwell). Among the hardy non-shrubby Veronicas there are several handsome border plants that are easily grown in ordinary well-tilled garden soil. They may be planted in autumn or in spring, and are increased by division at those seasons or by sowing seeds in a box of soil in a frame in early summer. The favourite one is *Veronica longifolia* (subsessilis), which grows 2 to 3 feet high and bears attractive spikes of blue flowers in summer. *Veronica spicata*, with blue, white, or rose coloured flowers, according to the variety chosen, is 12 to 18 inches high. *Veronica gentianoides*, pale blue, 18 inches high, blooms in spring and early summer. Of the low-growing kinds choose *Veronica rupestris*.

Viola (Pansy, Viola and Violet). The Viola is increased by cuttings taken in September from the young shoots that spring up in the centre of the old clumps and inserted in sandy soil in a frame kept closed for a few weeks. During the winter months they must be ventilated

freely in mild weather. They remain undisturbed until spring, when they are "hardened off" and planted out in April or early May. The *Violas* may be left undisturbed for two years; they then form large clumps and provide a magnificent show in spring. They are often used for spring bedding; if wanted for this purpose the old plants are separated in summer, grown on a reserve border until October and then planted in the flower beds. *Violas* are easily raised from seeds and certain varieties come true, or seeds of distinct colours may be obtained. But the best named bedding varieties are increased by cuttings.

Viola cornuta is a delightful plant bearing rather small flowers in many attractive shades of colour—blue, rose, purple and so on. It is easily raised from seeds sown in summer on a seed bed out of doors to provide flowering plants for the following year.

Viola gracilis is a charming plant of slender growth with deep violet-coloured flowers in early summer; it is most suitable for the rock garden and may be grown from seeds; there are several varieties having flowers of different colours.

Other pretty little rock garden *Violas* are *biflora*, yellow; *calcarata*, blue; and *bosniaca*, claret colour.

Pansies are increased by cuttings taken in August and placed in sandy soil in a frame, where they will soon form roots if the frame is kept closed for a few weeks. Subsequently they are treated as advised for the bedding *Viola*. Pansies are also easily raised from seeds sown out of doors on a prepared seed bed in summer, and that is the best method for the amateur who wishes merely to have a display in the garden and does not desire to grow the named varieties for show. The seedlings will flower profusely the following year if planted in October.

The Sweet Violet is a great favourite, but it is satisfactory only in country gardens; near cities and large towns it does not flourish. It thrives best in partial shade, as on a border facing west; the soil must be deeply dug, and, if heavy, leaf-mould and decayed manure ought to be dug in. The plants should be set out in September at about 15 inches apart. They are increased by pegging down the runners in April.

CHAPTER 8

The Herbaceous or Hardy Flower Border

A GARDEN border planted with a careful selection of hardy flowering plants is a source of interest and delight from spring until autumn. This form of gardening has become extremely popular in this country, especially during the present century, and that is scarcely surprising when one considers that it is in many ways the simplest of all, and while entailing the least labour and trouble, yet provides charming effects throughout the greater part of the year and yields innumerable flowers for cutting. In this way it fulfils the expectations and satisfies the demands of the average grower and lover of flowers.

The mixed flower border is planted chiefly with hardy herbaceous perennials, though bulbs and annuals are also pressed into service. Occasionally, for the purpose of filling blanks left by the fading of early flowers, a few groups of tender, summer-flowering perennials are put in; and to prolong the gaiety of the border, Border Chrysanthemums, which have been grown in flower-pots or in a reserve border, may be used. But even without the help of these additions it is possible to keep a mixed flower border reasonably gay from spring until autumn.

A hardy herbaceous perennial is a plant that is left undisturbed in the border from year to year without suffering harm, and makes fresh top growth annually from a perennial rootstock; the rootstock lives on for a varying number of years, while the flower stems develop and die within the year.

Annuals are plants which die after having flowered. If hardy, they may be sown in late summer out of doors in order to provide flowers in spring and early summer, but more commonly they are sown in spring to furnish flowers from July onwards.

Of bulbs, there are those that bloom in spring, summer and autumn, and the beauty of the hardy flower border may be extended very considerably by making use of some of them. As those that flower early are rather a nuisance when the blossoming season is past, owing to the untidiness of their leaves, their positions must be chosen with great care. They should be placed where, as far as is possible, their untidiness will be hidden by the advancing shoots or stems of later-flowering plants; there is no better place for them than among the clumps of such tall perennials as Michaelmas Daisies, Monkshoods, Heleniums, and others

of that type. If they are so planted, their flowers may be enjoyed in the spring of the year, and as soon as the leaves begin to fade the vigorous shoots of the neighbouring perennials will hide them from view.

Equal care must be taken in placing the summer-flowering bulbs, especially those that remain undisturbed; otherwise they are certain to be damaged during times of renovation and cultivation. They should be set among plants that are best left alone for many years, such, for example, as *Eryngium* or Sea Holly, *Gypsophila*, Japanese Anemone, and so on.

In dealing with a large flower border it is well worth while considering whether a few flowering shrubs cannot be introduced with advantage. If the right sorts are chosen they are just as attractive when in bloom as the herbaceous perennials, and they possess this advantage over the latter, that they are of considerable decorative value even when out of bloom. Some of them are evergreen and are thus attractive all the year round; others may serve as a suitable setting for the brilliant flowers grouped round them; and all add a certain welcome stability of form and variety of outline to the border.

The Use of Climbing Plants. Certain climbing plants can often be used to great advantage in the mixed border, especially some of the rambling Roses and Clematis. When trained over tall poles at the back of the border they add immensely to its beauty during the summer season; in spring, the fresh growths are pleasant to look upon, and even when the flowering season has passed the lustrous

green leaves which are typical of many rambling Roses certainly do not detract from the charm of the border.

A particularly happy way of making use of climbing Roses in the mixed flower border is by fixing posts at intervals of 10 to 12 feet and connecting them by means of chains or tarred rope, the latter being so arranged as to hang gracefully. The Roses soon reach the tops of the posts, and in the course of a season or two they will cover the hanging chains with festoons of leaf and blossom, which form a delightful background to the flower border. A similar series of posts and chains might well be arranged at the front of the border so that the display of flowers would be seen between garlands of Roses. It is better, especially at the front of the border, to connect the uprights with straight cross pieces of wood so that the view of the border is not obscured, and access to the plants for purposes of staking, tying, etc., is not hindered.

How Wide the Border should be. Although it cannot be gainsaid that the most imposing and satisfactory display is obtained from a wide and long border, that is not to say that a comparatively small border cannot be planted to produce a satisfactory result. The finest hardy flower borders are 15 feet or more in width and 20 yards or more in length, but a very charming display throughout many months can be obtained from a border say 8 feet wide and 10 yards or more in length. The smaller the border the more carefully does it need to be planted, since blanks caused by plants which have gone out of bloom are more

conspicuous. One has to be content with fewer plants of one kind.

In a large flower border it is usual to arrange the plants in groups; this method gives a wonderful blaze of colour in the height of the summer season, and owing to the large number of other later-flowering plants near by, the dowdiness of those that have lost their beauty is not noticed, at all events in a general view of the border.

spring as late as towards the end of March; but the later the planting is carried out the less satisfactory will the plants prove to be the first summer. Some late-flowering kinds, such as Michaelmas Daisies and Monkshoods, together with a few that are liable to perish in winter in heavy land, as, for example, Gaillardia, Pyrethrum and Scabious, may be planted in spring, say late in February or early in March.



The Californian Poppy,
or *Eschscholtzia*, a
showy annual to sow
near the front of the
herbaceous border.

Biennials, of which the seed is sown one year to produce flowering plants the following year, such as Sweet William and Canterbury Bell, may be made use of, but in order to maintain a satisfactory display it is necessary to have a few Chrysanthemums to replace them; by the time the biennials are over it is then too late to sow seeds of annuals with any certainty of their proving satisfactory.

When to Plant. The best time for planting most hardy herbaceous perennials is in October and November. They may also be put in during the winter months, and in

It is well worth while preparing the border thoroughly, for most of the plants must remain undisturbed for several years. Some are rather slow in becoming established, Gypsophila and Japanese Anemone for instance, while others only reach their full beauty when they have had time to develop into large clumps; thus once planted they must not be interfered with, in some cases, for many years. I believe many gardeners, both amateur and professional, fail to get the best from some hardy herbaceous perennials because they persist in lifting and dividing them every few years,

instead of leaving them undisturbed until such work is rendered essential by the deterioration of the plants.

The correct way to prepare a border for hardy flowers is to have it double dug or half trenched; in other words, it must be cultivated two spits or spade depths down. If the soil is heavy and clayey that means a good deal of hard work,

surface soil and forked in, so as to render it as suitable as possible to the plants and to encourage the formation of roots.

A hole large enough to accommodate the roots of each plant should be taken out, and as the soil is filled in again it should be made fairly firm by treading. Care should be taken not to plant too



A beautiful annual for a sunny flower border. *Bartonia aurea*, which bears yellow blooms.

but it pays handsomely. It is accomplished by first taking out a trench at one end of the border and wheeling the excavated soil alongside the other end; the trench should be one spit deep and 18 inches or so wide. The bottom of the trench is then dug over, and manure, leaves, or garden refuse mixed with it. The adjoining top soil is then put in, thus filling the first trench and opening a second trench one spit deep.

The second trench is treated in a similar way, and the work proceeds until the whole of the border has been trenched; the soil first taken out is used to fill the last trench. Such materials as decayed manure, leaf-mould, wood ashes (and coal ashes if the soil is clayey), road scrapings, grit, sand, and old potting soil should be added to the

deeply or there is a danger of the plants decaying during the wet, dull weather of winter. The crowns or centres of the plants should be arranged only just below the surface. If protection is thought to be necessary, though it is not required as a rule, it is best afforded by placing old ashes over the plants.

Arranging and Grouping. It matters not how well grown are the plants, or how tidy is the border, if the arrangement of the border is faulty and the neighbouring colours are inharmonious the display will prove disappointing.

It is possible to have a beautiful and satisfactory flower border without creating elaborate colour schemes; in fact, the average amateur gardener will probably

achieve better results if he concentrates upon avoiding colour discords than if he attempts to set out his border according to a prepared scheme in which the plants are grouped in colours.

The first things to consider are the comparative vigour and the heights of the plants made use of. Generally, the tallest will naturally be

A Common Mistake. Perhaps the greatest mistake of all is to use only one plant of a kind; they should be grouped at least three together, and if the extent of the border allows of it, five or even seven plants in each group will be better. So much depends upon the extent of ground at disposal. When the border is small, say not more than

The Mexican Aster, or Cosmos, a half-hardy annual which bears long-stemmed blooms in late summer.



placed towards the back of the border, those of medium height in the middle, and the low-growing kinds towards the front of the border. It is, however, a mistake to have a border of uniform outline; its appearance is far less interesting than when a taller plant or group of taller plants is allowed to encroach a little upon the lower kinds; similarly, the dwarf plants should be so disposed that here and there they run back into and between the tall plants, thus preventing a formal arrangement.

9 or 10 feet wide and but a few yards long, the smaller plants should be in threes, while of the tall kinds there will not be room for more than one or two of each.

An endeavour must be made to keep the groups of irregular outline, and this will be found much easier of accomplishment if an odd number of plants is used rather than an even number. Even with three or five plants of one kind it is possible to arrange a border of very formal appearance, and that is exactly what one should try to

avoid. If the outline of each group is in the form of an irregular circle, one plant being placed in the middle and the others at equal distances round it, the result will not be a happy one. An endeavour must be made to let one group run into the adjoining one; some groups should extend sideways, others run towards the back of the border, and so on, each group being as irregular as possible and intermingling naturally and pleasingly with the others.

In planting a large border for colour effect it is best to begin with white flowers, and gradually to work up to red through pale blue, blue, pink, and rose, keeping the brilliant reds and orange shades to the middle of the border. The second part of the border should be arranged in a similar fashion so that the colours gradually fade from red through orange to yellow, blue, rose, and lavender to white.

Colour Planning on Paper. Who has not planned a colour scheme for a border of flowers and afterwards discovered, when the plants are in bloom, that the effect is not nearly so pleasing as desired? This is chiefly because the colours could not be seen when planning. Readers who have been disappointed in this way should try the following method, in which real colours are used in planning.

Procure one or two of those cards which advertise distemper and on the surface of which some fifty or sixty coloured discs about $\frac{3}{4}$ inch across are pasted. Cut them neatly out and write the colour on the back of each. Now draw a plan of the border to a scale upon which the discs can represent groups of flowers of a certain size. If 18 inches is

size the scale will be $\frac{1}{24}$ th, or $\frac{1}{2}$ inch to 12 inches.

Using Coloured Discs. There are several ways in which these discs can be used. If you wish to stock a new border attractively, it may be done as follows. Find discs to match the colours of the flowers you wish to use and write on them their names, together with height and season. They can now be spaced on the plan, the taller plants at the back and the smaller ones nearer the front, but don't be too precise when doing this. Allowance can be made for larger or smaller groups by keeping them apart or overlapping them, as the case may be.

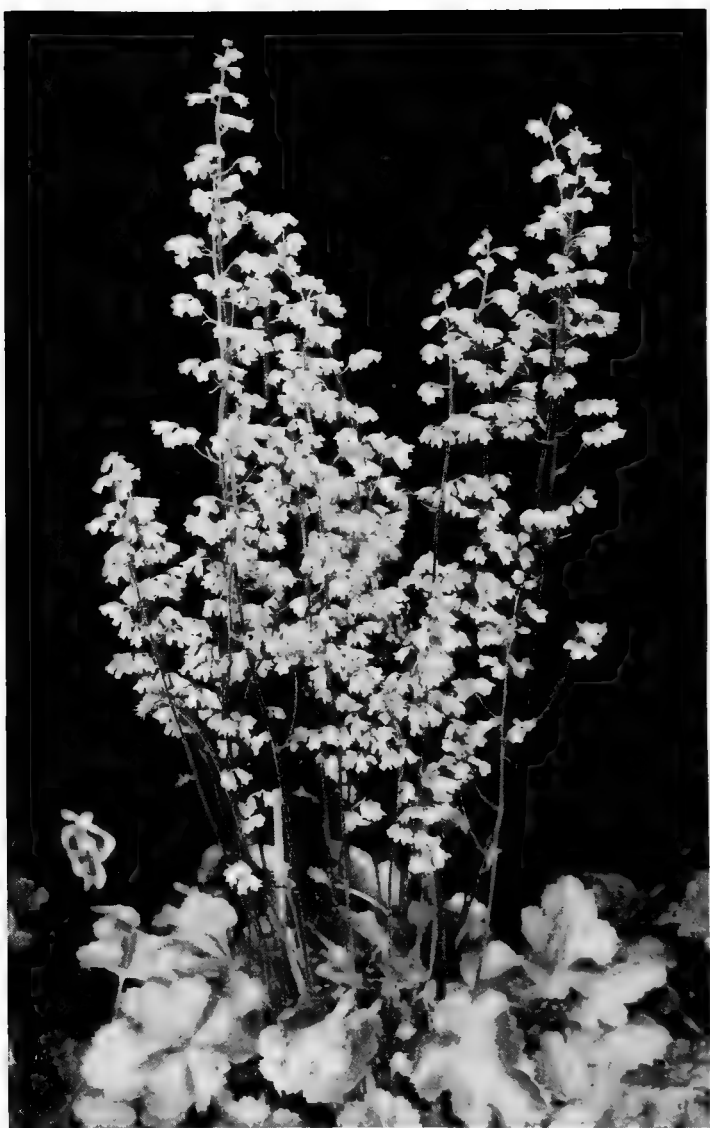
If you have a flower border and think it can be improved by moving one or two plants, try this. Plot on the plan the actual positions of the plants as they are now, then cover these positions with discs of the same colour. If one or two of them are moved about, it can be easily seen where you have erred when planting, and they may be altered accordingly.

With the aid of these discs, a sheet of paper, and a catalogue of flower seeds innumerable colour schemes can be worked out and one obtains a very good idea of the effect of one's labours before planting has actually begun. It is also found how many plants will be required to fill a certain space.

Learn when the Plants Flower. An important consideration, often lightly passed over when planning the herbaceous border, is the flowering period of the different plants. Lists of suitable subjects for different purposes are a very useful standby—for instance, those which bloom over a long period, with



May-flowering Tulips among Forget-me-nots make a delightful display



A favourite hardy border flower, Alum Root or Heuchera, which bears graceful sprays of blush, white or crimson blooms in May ; they are delightful for cutting.



Rose beds on the lawn in full summer beauty



The Chinese Lantern or *Physalis Franchetii*, a hardy perennial, is grown for the sake of its orange-coloured, lantern-like "fruits," which make an admirable indoor decoration in autumn and winter.

height and colour appended, plants suitable for seaside gardens, and so on.

Many amateurs who remember the heights of their plants and the colours, plan to place harmonizing or contrasting kinds together, neglecting the fact that one plant flowers in June or early July, while another may not do so until the end of August or September, so that the colour scheme is lost and the whole effect is disappointing. It is very helpful to compile a list of flowers and their flowering seasons, with their heights and colours, thus :

Blooms June- July.		Height.	Colour.
Colour.	July.		
Pink	Lupin	3—4 ft.	Salmon shell
"	Heuchera	1½—2 "	Coral
"	Sweet William	1 "	Salmon
Blue	Delphinium	3—6 "	Mixed

Hardy plants can be roughly classified into three groups : tall, 4 to 7 feet ; medium, 2 to 4 feet ; and short, 9 inches to 2 feet. Most busy gardeners will find these lists handy, but each needs to amend his own, as flowers bloom at different seasons in different localities.

Plant Early and Late Kinds Together. Again, in spacing and grouping, care should be taken to see that plants of the same flowering period are not placed too close together, otherwise at a later season this will cause a big gap in the border. For instance, Lupins planted in groups of three should be set so that another later-season group (if necessary, of a similar shade and height) can be put between them.

X O X } X = Phlox, salmon : Aug. and Sept.
O X O } O = Lupins, pink : June and July.

Delphiniums look best grown in large groups, and although they can be forced to produce a second flower crop later in the season, it seems unwise entirely to depend on

this. Plant Dahlias or Chrysanthemums close by, therefore, or Aconitum Wilsoni, which will carry on the blue colour scheme.

To plant Gladioli among June-flowering Irises is a good plan. Pæony, Pyrethrum, Columbine, and Oriental Poppy all flower fairly early. Plant Aster amellus or Heleniums near Pyrethrums, and dwarf Dahlias or Anemone japonica near Pæonies, and Iceland or Sunbeam Poppies near Oriental Poppies.

Another interesting suggestion is a list of hardy plants to take the place of the usual half-hardy bedding plants so often used to fill gaps in borders. This means the saving of big expense in the long run and much time and labour. August blooming Asters could be replaced by Michaelmas Daisy (Aster amellus) or by Erigerons, Antirrhinums by Phlox decussata in nearly all similar colours, Violas by dwarf Campanulas and Stocks, and so on ; it is much more interesting to make one's own lists from personal observation and experience.

Hints on Cultivation and Manuring. Providing the border was prepared for planting in the way described, the plants will need little further attention in matters of cultivation and manuring for the first year or two. Subsequently, however, steps must be taken to keep the soil fertile and the roots supplied with plant foods in adequate quantity. Nothing does so much good as an application of stable or farmyard manure in a partially decayed state. This not only supplies the plants with nourishment, but it provides the ground with humus, and that is one of the chief essentials of garden soil.

Such material is, however, often difficult to obtain nowadays, and always expensive, and it may be necessary to provide substitutes. Leaf-mould is excellent to apply as a top-dressing to flower borders in spring, while spent hops, road scrapings, pieces of turf, soil in which pot plants have been grown, and wood ashes are all excellent, and compensate, in part at least, for the absence of yard or stable manure. On heavy land sifted ashes may be applied in winter with advantage, for they render the soil more workable and assist its drainage. Leaves should be gathered in autumn and made into heaps; by spring they will be sufficiently decayed for putting on the border.

The best time to apply manure is in early spring, as soon as the border has been forked over and tidied up for the season. If put on in autumn or winter the manure keeps the ground cold and wet and prevents its exposure to air, frost and snow, which is so beneficial. Further, if heaped closely round the dormant plants, manure harbours soil pests, and may result in the decay of some of the less hardy kinds.

It is useless to apply artificial manures to a flower border of which the soil is deficient in humus or decayed vegetable matter, which is supplied by yard manure, leaf-mould, and so on. They must not be regarded as substitutes for these, but rather as additions to them. The best general artificial manure for the flower border is basic slag; this ought to be applied in early autumn at the rate of about 6 oz. to the square yard. If this is supplemented by superphosphate of lime at the rate of 2 oz. per square

yard in spring, the plants are not likely to suffer from a lack of phosphates, which are so essential to the production of a satisfactory harvest of blossom.

Sulphate of ammonia and nitrate of soda are quick acting artificial manures, which are useful for application in spring to assist the growth of backward plants, but as a rule they are not required so far as border plants are concerned.

In late February or early March, as soon as the soil is reasonably dry, the border should be carefully forked over to loosen the soil, which is certain to have been made somewhat sodden by the winter rains. After having been turned over to the depth of 3 or 4 inches with the garden fork, it will soon be in a condition when it may be further broken down by means of the Dutch hoe. From spring until late summer the hoe should be used frequently, at least once a week; this invaluable garden tool destroys weeds, both large and small, especially if used in hot, dry weather, and keeps the surface soil loose, thus preventing the evaporation of moisture.

Staking and Tying. As the spring merges into summer the border plants make rapid progress, and many of them must be adequately supported, or the stems will fall over and become bent and misshapen; if that should happen it is almost impossible again to get them perpendicular, and the appearance of the border will be spoilt. Although some artificial support is undoubtedly required, especially by the vigorous plants, it should be as unobtrusive as possible, otherwise the remedy may be worse than the evil.

Amateurs rarely support their plants properly and well. Either they make use of bulky sticks, which are far too conspicuous, or they do not support the plants early enough. Some there are who insert one strong stake, bunch all the flower stems together and tie them to the stake, thus destroying all the charm and grace of the plants and their flower display.

The chief points to bear in mind are to use as few sticks or stakes as possible, to choose them of such a height that when the plants are in full bloom the sticks will be hidden by the stems and shoots, and to see that staking is done early in the season, before the growths have grown so high that they are unable to support themselves.

The best supports for many slender growing plants of moderate height are pea sticks thrust among the developing shoots; they are sufficiently strong to keep these upright, yet when the plants are full grown they are seen scarcely, if at all, and do not in the least detract from the natural grace and beauty of the plants; they do in fact add greatly to the value of the display, because they ensure that the flower stems are held well up to view.

When dealing with vigorous kinds, such as Delphinium, which have comparatively few strong stems that are partially self-supporting, it is sometimes sufficient to use bands of string at about 12 inches apart, from a height of 2 feet or so from the ground to a height of 4 or 5 feet. More often, however, it is essential to have three stakes inserted towards the outside of the clump round which the string can be twisted, thus strengthening the support. The sticks can be placed

behind some of the stems, and as the string bands will not be visible from a short distance, such support, while adequate, is not noticeable, and is therefore ideal.

When staking vigorous perennials which produce numerous flowering stems, such as *Helenium* and *Michaelmas Daisy*, it is best to insert a number of strong sticks near the base of the plant, and to incline them outwards, so that the heads of flower when in full beauty will not be crowded together, yet are prevented from being blown about and damaged by wet and windy weather. Bands of tarred



How to support vigorous border plants.

string passed round the sticks from half-way up the latter to near their tops will finish off the work satisfactorily.

Groups of annuals may usually be given sufficient support by placing twiggy pea sticks among them, or by placing sticks round the outside of the groups and connecting them by string or raffia. The way to stake Dahlias is to drive in one stout stake and to attach the shoots loosely to this by means of raffia. In all cases the raffia or other tying material should first be passed round the stake so that it will not slip; it is then a good plan to twist the strands several times before they are fastened round the flower stems

Raffia is a far cheaper material for tying than string, and if it is twisted instead of being used in its natural flat state its strength is increased, and it is less conspicuous. Raffia is much easier to handle if it is first well moistened.

Cutting down Perennials in Autumn. Inquiries are often made concerning the work of cutting down the stems of herbaceous perennials in autumn. This is a matter that needs some consideration. Why, for instance, should not some of them be allowed to remain for the sake of their decorative appearance throughout the autumn and early winter months? It is true that there may be some disadvantage in allowing the plants to bear such large numbers of seeds as will naturally result if the flower stems are not interfered with, but at least, so far as the vigorous perennials are concerned, that does not appear to have any deleterious effect upon their welfare. How decorative, for example, are the old flower stems of *Spiraea*, *Astilbe*, *Michaelmas Daisy*, *Japanese Stonecrop*, and others! It is true that they are somewhat untidy, and those who have a passion for neatness in the garden are not likely to let them remain, once their beauty is past. But in the depth of winter they do relieve the monotonous aspect of the hardy flower border, and are at least pleasanter to look upon than the bare soil.

While some herbaceous perennials are wholly deciduous—losing all their leaves at the approach of autumn—others have evergreen leaves, though their flower stems die down. Those belonging to the former class may be cut off almost to the ground level in late autumn,

if it is wished to have the border thoroughly tidy for the winter. On the other hand, those possessing evergreen leaves and deciduous flower stems must not be interfered with, except that the latter may be cut off. Take the *Flag Irises* and *Torch Lilies* (*Tritoma*) for example; it would be incorrect and damaging to interfere with the green leaves. In the case of the *Torch Lilies*, which are liable to suffer damage from frosts, the leaves afford valuable protection in winter; in spring all that are dead or disfigured should be cut off.

Edging Plants. The selection of plants used in forming a margin to the hardy flower border is of importance, for the appearance of the display is easily marred by an injudicious choice, as it is enhanced by a judicious choice. If the border is next to a lawn care should be taken that the edging plants do not encroach on the grass, otherwise this is liable to be disfigured or even destroyed. If a gravel walk runs alongside the border, an opportunity arises of making an edging of rough stones, such as the smaller pieces of sandstone used in building a rockery; or bricks may be used, though they should not be so arranged that they form a serrated line, as is sometimes seen. An edging of that kind is only a degree better than one of flints stuck on end and limewashed or painted white—easily the worst form of edging that has ever been thought of.

A flower border never looks better than when it runs alongside a flagged or paved path; the edging plants may then encroach on the path as they will, and in doing so they form a natural and altogether

delightful margin to the border, caressing the cool stones with warm masses of colour or flinging their trailing flower-studded growths over them.

Edging plants ought not, I think, to be planted in a long straight line, although it is true that such a line of white Pinks bordering a long border is very charming in June. But such a plan accentuates the hard line of the margin, and it should be the aim of the planter to merge the groups into each other naturally so that no hard, straight lines are seen. Edging plants should be grouped just as those in other parts of the border are grouped; as they are smaller more of them will be needed in each group. When thus arranged they are more attractive than when disposed in a straight line.

When the flower border runs alongside the lawn such plants should be chosen as are not likely to encroach, or that can be trimmed to keep them from spreading on the grass. Several are suitable, as Thrift, Violas, Pinks, Heuchera, London Pride, Perennial Candytuft, the yellow Alyssum saxatile, the grey-leaved Stachys lanata, and Veronica incana, a plant of low growth having greyish leaves and blue flowers.

When the border runs by a gravel or paved walk one may choose plants that look best when they are allowed to trail over the margin, forming hummocky tufts here and spreading into slender trails there; for example, Silvery Saxifrages, Woolly Thyme (*Thymus lanuginosus*), Mossy Saxifrages, *Campanula rupestris* (a dainty and free flowering dwarf Bellflower), *Nepeta Mussinii*, the *Helianthemum*

or Sun Rose, and Snow in Summer (*Cerastium tomentosum*).

Grey-leaved Plants. Every flower border ought to contain a few grey-leaved or silver-leaved plants; they are attractive throughout the year and particularly interesting in winter. It is very desirable to place the grey-leaved plants in a sunny position. In shady positions and cramped surroundings most of them lack the glistening silvery character which is so striking when the plants are grown in the open garden.

The kind of soil in which they are planted influences the quality of leaf colour. In any soil the leaves will naturally have a greyish appearance, but the best results are only secured in well-drained ground which has been tilled and manured. For some plants in particular, notably Wormwood and Lavender, a warm, light soil is desirable.

Most grey-leaved plants flower freely and produce seeds which allow of their being increased without difficulty. Taking cuttings and dividing the clumps also provide means of propagating most of the plants named.

Achillea (Milfoil or Yarrow). The Yarrows thrive in ordinary soil in sunny positions, flower in summer, and are best increased by division in late autumn and early winter. Those with grey or silver foliage are: *argentea*, snow white, 4 inches; *Huteri*, white, 6 inches; *Kellererii*, white, 6 inches; and *umbellata vera*, white, 6 inches.

Alyssum (Rock Madwort). These thrive in any well-drained soil, and should be planted in a sunny position. Cuttings in late summer and division in early autumn are the usual methods of increase,

though they are also readily raised from seeds sown in April or May. The chief sorts are ; *rostratum*, golden-yellow, 9 inches ; *saxatile*, golden-yellow, 12 inches, very showy in masses ; *spinosum*, white, 4 inches. All flower in spring.

***Antennaria tomentosa*.** This forms a perfect carpet of grey foliage, and in spring and early summer the masses of white flowers, 4 or 5 inches high, are well described by its popular name. Increase is by division, cuttings and seeds.

***Artemisia Abrotanum* (Southern-wood or Old Man).** Has finely cut greyish or hoary foliage, and grows 2 to 4 feet high. Prune in March. Others are : *argentea* (Silvery Wormwood), silvery-white foliage, 1½ feet ; *stelleriana*, a creeping Wormwood, with silvery foliage, 6 inches. Plant in ordinary light soil and a sunny position. Increase by cuttings in August.

***Cerastium tomentosum*.** Silvery-white foliage, white flowers in early summer, 4 to 6 inches high. This plant makes a good permanent edging. It is readily increased by seeds, cuttings and division, and should be cut well back after flowering.

***Dianthus caesius* (Cheddar Pink).** This is excellent for an edging and for planting between the crevices of a paved walk. It is 4 inches high, and has rosy-pink fragrant blossoms in summer. Mix plenty of old mortar rubble with the soil before planting. Border Pinks must be included among the grey-leaved plants. The following twelve sorts are easy to grow and have fragrant flowers : Albino, white ; Anne Boleyn, deep pink, crimson centre ; Diamond, white ; Early Blush,

pink ; Early Red, rose, crimson centre ; Elsie, deep rose ; *fimbriatus alba major*, white ; *Gloriosa*, rosy mauve ; Her Majesty, white ; Mrs. Sinkins, white ; Paddington, red, plum-coloured centre, and Rose de Mai, cerise pink. Pinks are increased by division of the clumps during September and October.

***Helianthemum* (Sun Rose).** For planting towards the front of the border or for covering sunny banks the Sun Roses are valuable dwarf evergreen shrubs, 4 to 6 inches high. They flower very freely from May to July, and are readily increased by cuttings inserted in a cold frame or handlight during August and September. Three sorts with silver-grey leaves are : Beauty, rose pink ; Mrs. Croft, rose ; and The Bride, pure white.

***Lavandula* (Lavender).** The Munstead Early Dwarf Lavender has earlier and darker flowers than the common kind on bushes not more than 1 foot high ; the Dutch variety is also more "bushy," and has lighter grey leaves, hence is more effective. Lavender bushes are kept neat and trim by clipping after flowering. Cuttings root readily under a handlight in late summer.

***Lychnis coronaria* (Crown Champion).** Another name for this favourite rose-red flower is *Agrostemma coronaria*. It grows 2 to 3 feet high, flowering throughout the summer. At other times the plants are a mass of hoary grey leaves. This is one of the few grey-leaved plants which really do well in partial shade. There is a white-flowered sort, and *atrosanguinea* has deep rose-crimson blooms. Self-sown seedlings are frequent, and

the plants may be increased by division.

***Nepeta Mussinii*.** This is one of our best dwarf border flowers, 12 to 18 inches high. From May to September the grey leaves are almost hidden by masses of lavender-blue blossoms. Increase is by division of the clumps in October or March, and by cuttings.

Salvia argentea is the Silvery Clary; it has hoary or silvery woolly foliage and white flowers, 3 feet. The Common Sage, *Salvia pratensis*, is an attractive grey bush some 2 to 3 feet high. Increase is easy by seeds, cuttings and division.

***Saxifraga (Rockfoil)*.** The free use of the encrusted Silver Saxifragas will add considerable interest to the flower border margin. The plants form silvery rosette-like tufts about 2 inches high. They like well drained, gritty soil containing lime, and are readily increased by division. Special mention may be made of *cochlearis*, *crustata*, *lingulata*, *superba*, *longifolia* and *Rocheliana*.

***Scabiosa pterocephala*.** This is one of the dwarf Pincushion Flowers with spreading tufts of grey foliage which make a useful permanent edging; it grows about 6 inches high. In summer and autumn the mauve-purple blossoms are showy. Increase is by division in October or March.

***Sedum (Stonecrop)*.** *S. Ewersii* is a distinct and useful plant with grey-green foliage, 4 inches high, with rose-coloured flowers in summer. *Sedum glaucum* is a very small plant that forms a grey cushion, and makes a neat, permanent edging. *S. spathulifolium* is dwarf and spreading in habit,

with yellow flowers in June. All are readily increased by division and thrive in ordinary soil.

***Stachys lanata (Lamb's Tongue)*.** This is one of the best grey edging plants with silvery-white woolly leaves. It is easy to grow and increase is by division.

***Thymus (Thyme)*.** The Silver Lemon Thyme (*Thymus citriodorus argenteus*) grows about 9 inches high, and has silver-variegated scented leaves. Increase is by cuttings and division.

***Veronica incana (Grey Speedwell)*.** This grows 6 inches high, the silvery-grey foliage being very attractive in winter. From June to August the violet-blue flowers are attractive.

Bulbs in the Flower Border. Bulbs are apt to be rather a nuisance in the mixed flower border, because to some extent they prevent the proper cultivation of the soil between the plants, and unless great care is taken, and their positions are accurately known, many of them are bound to be damaged during the work of cultivation and when alterations and rearrangements are undertaken. Nevertheless, they are so useful, and those that bloom in spring so valuable because they flower when the border plants have scarcely begun to make fresh growth, that an endeavour should be made to include a selection of them. So far as the spring-flowering kinds are concerned, and particularly the Daffodils, I find it is best to plant a few groups among the vigorous perennials towards the back of the border; they will be appreciated in March and April, and as the perennials start to grow their fading leaves will soon be

hidden. One can always manage to put in a few clumps in such positions, and in other odd corners where they are not likely to be in the way or to be disturbed.

Summer-flowering Bulbs. So far as summer-flowering bulbs are concerned, one must arrange for their inclusion and take careful note of their positions, for they should be looked upon as indispensable. Among these are Spanish and English Irises in brilliant colours ; they ought to be planted in October.



The Martagon Lily.

The Spanish Irises are obtainable in shades of blue and yellow ; they grow about 20 inches high, and should be planted at 4 inches apart and at about the same depth. English Irises in shades of purple and mauve, chiefly, are more vigorous, reaching a height of 2 feet or so ; the bulbs should be about 6 inches apart and some 4 inches deep. The tuberous roots of the inimitable blue-flowered *Salvia patens* ought to be started into growth in the greenhouse in spring, and planted out of doors in May.

There are many delightful Lilies suitable for planting in the mixed flower border. The chief favourite is the Madonna Lily (*Lilium candidum*), which bears its exquisite spires of white blooms

in June : the bulbs ought to be planted in August or early in September, so that they will produce a strong tuft of leaves before winter. If planted later they are not likely to bloom the following year. This lovely white Lily associates charmingly with the blue-flowered Delphiniums or Larkspurs, and should if possible be planted near them.

Another valuable Lily for the mixed border is the Japanese *Lilium speciosum*, which bears large, handsome flowers, white marked and spotted with rose or crimson, in late summer and autumn. This and the Madonna Lily thrive in ordinary loamy soil, and increase in size and beauty from year to year.

Lilium croceum, the old Orange Lily, is very showy when its large and brilliant orange-red blooms are in full beauty in June, and thrives without any special care. *Lilium Thunbergianum* and *Lilium elegans* are two other good Lilies suitable for planting near the front of the border ; they bloom in June, and the colour of the flowers is some shade of yellow or orange. The Panther Lily (*Lilium pardalinum*) is a tall and particularly handsome flower, crimson with orange spots ; it thrives best in partial shade, and the site for it should be prepared by adding peat, leaf-mould and sand. *Lilium Henryi*, a tall pale orange-flowered Lily, and *Lilium testaceum* (the Nankeen Lily), with nankeen yellow blossoms, and *Lilium regale*, are other good Lilies for the flower border.

Gladioli, which are now obtainable in innumerable shades of colour, are invaluable for providing flowers from late July until the end of August if a representative

selection is chosen. The roots are planted towards the end of March in well-prepared ground with which some sand, leaf-mould and wood ashes have been mixed; they

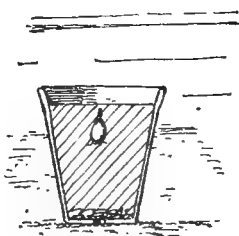
The Cape Hyacinth (*Galtonia candicans*) bears drooping, bell-shaped white flowers on stems 3 feet or so high in August, and is invaluable. The bulbs are taken up



Montbretia

Take up the
old bulbs.
separate & replant
in clumps

The choicer of the
new varieties do
best when started in



pots or boxes in
a frame and
planted out later.

should be placed 2 to 3 inches deep. The old scarlet-flowered *Gladiolus Brenchleyensis* is still worth growing, but it is surpassed in beauty by many of the modern kinds.

in autumn and are replanted in March. *Eremurus*, or the Giant Asphodel, is very handsome. The roots should be planted in early autumn—October.



The old white Cottage Lily,
Lilium candidum.

Biennials for the Flower Border.

Among the biennials are such favourite flowers as Sweet William, Canterbury Bell, Wallflower, Polyanthus, Aquilegia, Foxglove, the tall and handsome Chimney Bellflower (*Campanula pyramidalis*), and Honesty. Some of these are really perennials, but they are best treated as biennials, either because they are not reliable after the first flowering or because freshly raised plants make a better show. Most of the biennials will be found useful at various seasons of the year for adding colour to the display. They may be grouped among some of the latest flowering perennials, and will serve to brighten up those portions of the border which otherwise might remain somewhat dull until the permanent plants come into flower. If they are taken up immediately the blossoms have faded they will not interfere with the development of the permanent plants.

Such as Wallflower and Polyanthus are very attractive in spring

before many of the chief plants have commenced to bloom, while Aquilegia or Columbine is so beautiful, if the modern long spurred varieties are grown, that room ought certainly to be found for them. In some soils they may be left undisturbed, but as a rule it is more satisfactory to raise them afresh from seed each year. Foxgloves are picturesque when planted among the coarser perennials at the back of the border, and once a few plants have been grown there will always be enough self-sown seedlings for replanting. They should be taken up in early autumn and planted out where they are to bloom the following year.

The white Foxglove is a charming flower, far surpassing in beauty those of reddish-purple colouring. Sweet Williams and Canterbury Bells are invaluable, for their display lasts for many weeks if care is taken to prevent the formation of seed by removing the faded flowers. Such as these, which continue to bloom well into the summer, should

be replaced by Border Chrysanthemums.

Seeds of the biennials should be sown in May so that strong plants may be available for planting out in autumn. If sowing is delayed until July the seedlings do not have the same opportunity of making progress. In growing the giant Chimney Bellflower (*Campanula pyramidalis*), which produces handsome spires of blue flowers 4 to 5 feet high, seed should be sown under glass, in frame or greenhouse, in March, otherwise it is doubtful if the plants will bloom the following year.

With this exception the seed of biennials is sown in May in boxes of finely sifted soil, placed in a frame, which should be kept closed until the seeds germinate. The seed boxes must be covered with pieces of glass to keep the soil uniformly moist. When the seedlings are of such a size that they can be handled conveniently, they are transplanted at greater distances apart in other boxes, and in a month or two will be large enough to be put out of doors on a reserve border ; there they will remain until they can be planted permanently in autumn.

CHAPTER 9

Roses and How to Grow Them

EVERYONE knows that Roses thrive best in soil which is inclined to be clayey, and if the possessor of such land finds it difficult to work in winter, at least he has the satisfaction of knowing that perseverance will bring its sure reward. Who has to plant Roses on light land, that which is sandy or gravelly, is not so happily placed; he may find the bill for manure mounting at an alarming rate without much obvious advantage. But he whose garden is on chalky ground is at a greater disadvantage still, for he has no option but to remove the chalk and to replace it with loam. Let us consider these three chief types of soil, and see how best they can be made to yield good Roses.

In dealing with heavy, clayey soil, the first matter of importance is to get the Rose-beds prepared early in autumn, in October or even in September, before the heavy rains set in. It is, of course, much easier to deal with then than later on. If, however, the work has unavoidably to be deferred until, say, late November, the gardener with heavy ground must adopt a somewhat unorthodox plan. He should plant as the task of digging proceeds.

That is to say, as soon as a por-

tion the full width of the bed is prepared, he should plant the first row of Rose trees before doing any further digging. If he proceeds in this way across the whole of the plot, bed, or border, he will avoid the necessity of treading on the ground already dug; and, as all who have had anything to do with this kind of soil know well, to tread upon it immediately it has been dug is to render it more sticky and less workable than ever. It is of further benefit to have at hand a barrowful of dry soil, which has been kept for the purpose beneath a shed, for use immediately round about the roots. It is a simple matter to tread it firmly, a point of considerable importance. But, as has been pointed out, all this additional trouble may be avoided if the bed is prepared while the ground is still moderately dry.

One should order the Rose trees for delivery when the bed is likely to be ready, for the sooner they are ordered the sooner are they likely to be dispatched. It depends upon the season whether or not they will be ready for dispatch in October. Many nurserymen are averse to lifting their plants until the ground has been moistened through; if the trees are taken from dry ground, the roots are liable to get broken in the process. If the ground should

be wet when planting has to be done, it is easy to minimise the consequent disadvantages by standing on a board instead of on the soil, and by making use of the dry mould already referred to.

The best manures for heavy soil are farmyard manure and basic slag. The former should be in a half-decayed condition, and is for use well below the surface; the basic slag should then be mixed with the upper soil at the rate of 6 ounces to the square yard. Both are applied when the bed is prepared in autumn.

Good as both these materials are, the chief thing in making a Rose-bed is to dig deeply. It is perhaps too much to ask the average amateur to dig the soil 3 feet deep, but if he would do so he would save many shillings, possibly pounds, that must otherwise be spent in manure in succeeding years. Complete trenching is no doubt the best preparation that can be given, and that implies moving the two upper feet of soil from one trench to the next, and in stirring thoroughly the third foot of soil.

However, we will suppose that the prospective grower goes quite 2 feet deep, and that he adds yard manure and basic slag as described; he will then have made a satisfactory beginning. If he adds a sprinkling of bonemeal in February at the rate of 3 or 4 ounces per square yard, scattering it on the soil and forking it beneath the surface, he will have done all that is necessary for the first year. In succeeding years he should add some basic slag in autumn, and in February Tonks' Manure, which is the best artificial manure for Rose trees.

Tonks' Manure. The following is the prescription: Superphosphate of lime, 12 parts; nitrate of potash, 10 parts; sulphate of magnesia, 2 parts; sulphate of iron, 1 part; and sulphate of lime, 8 parts. It is applied to the soil surface at the rate of 4 ounces to the square yard and forked in. If the amateur finds this mixture too complicated to make up, or is unable to have it made, he should rely upon bonemeal for the spring dressing.

It is advisable, every two or three years, to apply a top-dressing of yard manure in early spring after pruning is completed, and to fork it beneath the surface. I believe the possessor of a small garden will find his plants to be healthier, the ground freer from insect pests, and the bushes from disease if he uses artificial fertilisers generally and yard manure only occasionally.

It is a mistake to cover the Rose-beds with yard manure in autumn and to allow it to remain there throughout winter, as so many do. This practice keeps the ground sodden and prevents frost, rain, snow, and whatever sunshine there may be from reaching the soil and exercising their beneficial influences upon it. As for the practice, not at all uncommon, of heaping rank manure round about the base of the stems of standard Rose trees in autumn, it is wrong.

Soils which tend to be close, heavy and sour, and where the sub-soil is clay, can be permanently improved by a system of drainage. Draining such land not only removes the excess of moisture and resulting evils, but it enables the soil to be deepened—a most important point—increases the ground

warmth which is so helpful to many crops, and allows the beneficial influences of air to penetrate deeper. To test whether land needs draining, several holes some 3 or 4 feet deep should be dug. If water rapidly collects and stands in them for two or three weeks a system of drainage will be beneficial.

Draining Heavy Land. Land drains must, of course, be laid at a sufficient depth below the surface to allow of the ground being properly dug, trenched and cultivated, 2 feet or so deep usually being about right. Agricultural drain-pipes may be used, and the main drain should not be less than 3 inches in diameter, with the branches 2 inches in diameter. The main drain must discharge into a suitable outlet, which may be an underground tank, constructed of cement concrete, to provide a supply of water for use during dry periods. In clay ground the branch drains should be from 15 to 18 feet apart, and the pipes should have a gradual fall towards the outlet. The drain trenches should be filled in with stones, brickbats, and similar material to within 2 feet of the surface, to enable the water to find its way to the drains.

Preparing Light Soil. When one has light soil to deal with, somewhat different methods of procedure are necessary. There is not the same necessity for planting early in autumn; in fact, it is preferable to wait until the ground has been well moistened by the autumn rains and to plant some time during November. Since moisture drains away from light soil readily, the object must be to give such treatment as will minimise this tendency.

One cannot dispense with deep digging; the soil ought to be moved to the depth of about 2 feet, a good supply of cow or pig manure and garden refuse being placed at the bottom of the trench. Basic slag should also be added as previously recommended. Thus in dry weather the roots will be able to find moisture and sustenance. In May it is advisable to apply a mulch of spent hops or decayed manure, and if its unsightliness is objected to, turn it just beneath the surface. Then one can apply liquid yard manure freely with advantage, confident that it will not run to waste, but will be conserved for the benefit of the roots in the upper layer of soil.

Providing the initial preparation is thorough, and cow manure is placed at the bottom of the trench as advised, such further attention as is necessary consists chiefly in applying a mulch or top-dressing. This is particularly beneficial to Roses on light ground, and, in fact, may be said to be essential to their continued success. The mulch need not be of manure, for leaves, chopped turf, and lawn mowings are useful in adding to the store of vegetable matter or humus, and in preventing the soil "drying out" in summer. It is a simple matter to turn the mulch beneath the surface for the sake of appearance.

In dealing with chalky ground it is necessary to excavate the chalk if it comes to within 18 or 20 inches of the surface, for one cannot hope to grow good Roses in less depth of soil than this. It is a laborious task to do so, but it will prove cheapest in the end. The labour can be rendered somewhat lighter by excavating only to the depth of 12 or 15

inches, and in providing the additional depth by raising the Rose-bed above the surface. Turf should be dug in freely at the bottom of the trench, and mulching, as advised when dealing with light soil, will prove of great benefit.

How to Plant. There is no need to write at length on the subject of planting, for, after all, it is a simple matter. The chief points of importance are to trim all broken and bruised roots with a sharp knife, to spread them out as much as possible, to plant at such a depth that the junction of scion and stock is slightly covered, and to make the soil thoroughly firm. If the soil is wet at the time of planting the advice already given to use dry soil for placing immediately about the roots should be followed. After the uppermost roots have been covered with soil a little bonemeal may be sprinkled on the latter before the surface is finally levelled off. The planter ought to avoid using manure in contact with the roots.

Making a Rose-Bed. For the benefit of beginners it may perhaps be as well to describe briefly the way to prepare a Rose-bed. First dig a trench 2 feet deep and 2 feet wide across one end of the piece of ground to be planted, placing the soil taken out along the opposite end of the plot. Fork or dig the ground in the bottom of the trench, and mix in farmyard or stable manure. Mark out another width of 2 feet for the purpose of forming a second trench. Place the upper spit (about 12 inches depth of soil) at the bottom of the first trench already made. (Thus the soil in the first trench and the partially-prepared second trench will be on a level.)

Put the second "spit" of soil on top of the first "spit," thus filling the first trench and making the second trench 2 feet deep. Shovel up the loose soil, placing it on the top of the newly-filled trench, then dig over the bottom of the second trench, mix in farmyard or stable manure, and proceed to fill it in the way described by soil taken from a third width of 2 feet. The effect of working thus the full length of the bed is to leave a trench at the far end; this will be filled with the soil taken from the first trench and put alongside for the purpose.

Arranging the Rose-Beds. The questions of shelter, site, and aspect, that are worthy of careful consideration when one is dealing with an area of considerable extent, have not much interest for the owner of a small garden, who has to make the best of a limited plot. It is necessary, however, to realise that Roses will not grow well in shade; they must have the sunniest spot available. Neither should the beds be made near large trees or bushes or a hedge, for the roots of these will invade the soil and rob the Roses of much of the good store prepared for them.

Give the Roses the best position in your garden, because they will not grow so well in any other; moreover, there are plants that prefer positions which are not suitable for Roses. One of the great secrets of success in gardening, and, indeed, the only way in which to make one's garden give of its best, is to choose suitable plants for different places. Some will thrive in dry soil, others prefer shade and moisture, while still others—among which are Roses—

are satisfied with nothing but the best position.

If you are to grow Roses with real hope of making them a success, you must plant them in beds by themselves. It is foolish to put them among herbaceous plants, for example, as is not infrequently done, for as the season advances they are almost certain to be smothered; if this happens the shoots lose their leaves, become weakly, and soon die. Group the Roses in a bed or a series of beds; they will then be easy to tend, are less likely to be neglected, and generally will be far happier than if scattered here and there, where there happens to be room.

The simpler in form the Rose-beds are the better will they look; fancy designs, such as may do for carpet bedding, are unsuitable for Roses, and waste valuable space in a small garden. It is doubtful if Rose-beds ever look better than when separated by grass paths; these are to be preferred to those of gravel. Paths of stone paving, however, are delightful, and those of brick are also pleasing, and both have the great advantage over grass of being dry throughout the year. The cracks and crevices between the stones or bricks provide a suitable home for numerous dainty little plants that add still further charm to the garden of Roses.

Probably every reader has his own ideas about design, and will prefer to arrange the beds as seems best to him. He should, however, take care not to make them too wide, otherwise the work of tending will necessitate treading upon the soil, and this is best avoided. A bed 5 feet wide will accommodate

three rows of plants, and one can reach the centre from each side of the Rose-bed.

Colour Schemes. The question as to whether one should put other flowers in the Rose-beds often arises. In the first place it depends upon the distance apart at which the bushes are placed. If they are, say, 24 inches apart, there is need of some dwarf plant to hide the soil in the intervening spaces, but if one wishes to grow as many Roses as possible within a limited area, and puts the bushes about 18 inches apart, then there is no room for other flowers between.

Probably the best flower for putting among the roses is the Viola. It remains in bloom the greater part of the summer, keeps moderately dwarf, and when seen to be encroaching on the Roses the offending shoots may be cut back. If the Roses are grouped according to their colours—and this is the way to obtain the best effects—it is possible to arrange colour schemes with Roses and Violas. Pale blue Violas look well among pink Roses, deep yellow Violas among dark red Roses, purple Violas among yellow Roses, and so on.

The effect of a bed of mixed Roses, however gay it may be, is not so attractive as one in which the varieties are placed in groups. "That is all very well when you have plenty of space," the reader may exclaim, "but how is it to be done in a small garden?" The method to adopt is to purchase not one plant of a variety, but three, to place the three plants in triangular fashion together, and, further, to group all Roses of similar colour together. Thus one gets a breadth of effect and harmony of colour

that is wanting when the Roses are planted indiscriminately. Another point worthy of observance is to have some regard to the ultimate height to which the plants will reach; otherwise you may have big and little plants mixed up, and the result is not pleasing, while the smaller plants are likely to suffer through too close proximity to their more vigorous neighbours.

For edging the Rose-beds when they are separated by paths of gravel, brick, or stone, one may use Mossy Saxifrage, Thrift, Silver Saxifrage *Acæna microphylla* (New Zealand Burr), a pretty little plant with bronzy foliage and spiny, crimson flower heads, Alpine Pinks and Bellflowers, the little Violet Cress (*Ionopsidium acaule*), and others. Those who wish to devote the garden entirely to Roses will find that the dwarf *Polyantha* or Fairy Roses are admirable for edging; they bloom for many weeks in summer and autumn.

Supports for Roses. Wooden supports for climbing Roses can be made of rustic poles, larch, for instance, or planed or unplanned wood, but the parts buried below ground must be well tarred or treated with some other preservative to prevent decay. A Rose arch should be from 7 to $7\frac{1}{2}$ feet high above ground, and the posts be let into the ground not less than 2 feet. The upright posts should be about $2\frac{1}{2}$ inches wide, and the cross laths $1\frac{1}{4}$ inches by $\frac{3}{4}$ -inch, the whole firmly screwed together. If the arch can be made of oak, treated with preservative brown stain, it will look all the better. There are many forms of wooden supports for pillar Roses, larch or fir poles with the bark left on frequently being employed. These should be about 10 feet long, let into the ground $2\frac{1}{2}$ feet, and have three struts fixed round the base. The side branches may be cut off a short distance away from the tree trunk.

CHAPTER 10

Pruning Rose Trees

MANY Rose-growers have their own theories on the subject of pruning, and when in their own gardens those theories are put to the test and yield results that are satisfactory there is a likelihood that they may be broadcast and recommended to all and sundry. No doubt, in due course, methods of Rose-tree pruning that are generally practised at the present time will become obsolete and will be replaced by others as the result of continued experiment, and in part will have been forced upon us by new types of Roses. If we compare the methods of pruning Rose trees now found most suitable with those that were deemed best a generation ago, considerable differences will be discerned—differences that are due chiefly to the fact that the Roses themselves exhibit greater variety in habit of growth.

The truth is that Rose-tree pruning, like all other gardening "operations," must progress with the times: if we continue to lay down hard and fast rules and to make dogmatic assertions that brook no contradiction, sooner or later we shall find ourselves out of date in our recommendations, we shall realise that we have not kept pace with our subject.

It is absurd to imagine that one can say. "Cut this branch here and

that branch there, cut this shoot in March and that shoot in July," and in other stereotyped ways reduce the subject of pruning to something resembling a mathematical formula. Such information may be helpful to those who take no real interest in gardening and like to have a presentable show of bloom with as little trouble as possible, but it can never prove a reliable guide that will enable the keen grower to obtain the best results from his trees.

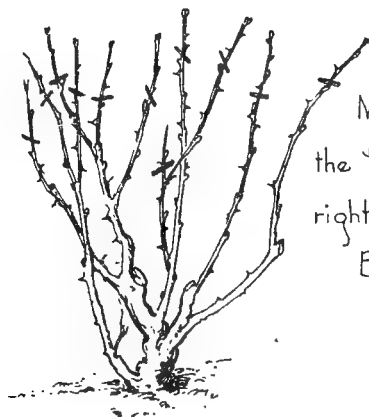
First Considerations. Rules there must be if advice on the subject is to be helpful, but if the reader follows them slavishly without exercising common sense and using his powers of observation, and if he treats all his trees alike, then he will succeed with some and will as certainly fail with others.

To get the very best from one's Rose trees it is necessary to take into account first of all the variety of Rose being dealt with, for modern Rose trees vary greatly in the way in which they grow. Some are of stiff, upright growth, others have slender, spreading branches, some are vigorous, others are weakly. Then one has also to consider the climatic and other conditions in which the Roses are grown and the health of the trees themselves; they may be thriving

lustily or they may be weakly and lacking in vigour; obviously the trees must benefit by careful consideration of their individual needs.

The whole subject is full of per-

of treatment. Perhaps the most helpful way of treating the matter is first to describe the orthodox methods of pruning and then to discuss such variations of them as



Merely taking off the tops is not the right treatment for a Bush Rose tree.

How a Bush Rose tree should look after pruning is completed



The top bud on pruned shoots should point outward as shown.

plexities, some of which the amateur can solve only by studying his plants and taking note of the way in which they respond to, or are affected by, different methods

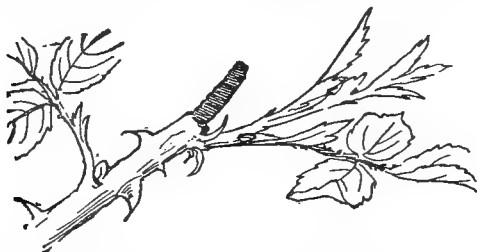
have been recommended and practised by growers who have carried out experiments.

Rule-of-Thumb Methods. There is this to be said for the ways of

pruning Rose trees that are generally followed—they have been evolved after years of experience and practice and have been found to yield satisfactory results generally. Although they may have been handed down from one generation of gardeners to another, and accepted without demur and without critical examination, and so far may be regarded as rule-of-thumb methods, it is nevertheless true that they would scarcely have

let them grow as they will, as we do with many other shrubs? As a matter of fact, some Rose trees are all the better for little or no pruning, but of that more anon.

When Roses are planted in flower beds of limited size and in gardens of restricted area it becomes necessary to restrain and direct their growth for the purposes of keeping the bushes shapely and the garden orderly and to ensure the production of blooms of fair size and



When Rose trees are pruned, the shoots should be cut just above a bud, otherwise they will die back.

found favour for so long if they had not yielded tolerably good results.

New Roses—New Ways of Pruning. The doubts that have been cast on these orthodox methods during the last few years have arisen because of the different kinds of Rose trees with which we have to deal. Roses cannot be grown to perfection merely by applying the usual rules of pruning that have been recommended for years. Those ways are sound enough, but they must be varied according to the type and variety dealt with, and there, in a nutshell, you have the whole secret of successful pruning. As has been pointed out, the trees vary greatly and it does not follow that because one variety thrives when pruned in a particular way that another will do so.

Why we Prune Rose Trees. Why do we prune Rose trees? Why not

quality. It may thus be said that the objects of pruning Rose trees are to keep them within reasonable bounds, of shapely form, and to get rid of useless branches, so strengthening those that remain that they will bear satisfactory blooms.

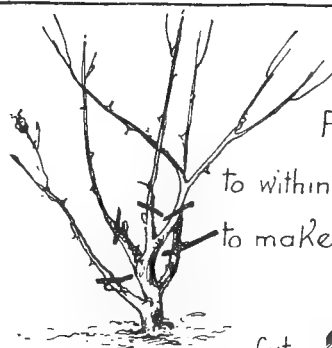
If left unpruned, most Rose trees, at all events those varieties commonly grown for filling formal flower beds, would become straggling, untidy, bare at the base, and their development would be hindered by the presence of thin, weakly shoots that are in themselves useless and disadvantageous to the others: further, the blooms, though numerous, would probably be lacking in size and form or shapeliness.

The way in which we cultivate Rose trees is artificial, and we must continue to practise artificial methods in our management of

them. If we had unlimited room for Rose growing and could allow each bush to develop to its utmost extent, merely thinning out old and weakly branches, we should achieve astonishing results with certain varieties ; but, as matters are, if we wish to grow a representative selection in a restricted space they must be kept within bounds by

pruning or cutting back the branches.

Easily Grown Roses. It is as well to realise that a Rose tree can be grown to perfection without being pruned in the orthodox way. One has only to take note of giant bushes in the gardens of those people who like to have Roses in bloom but have no real interest



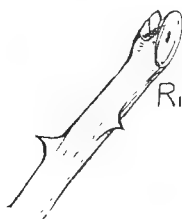
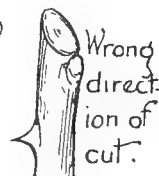
Spring planted
Roses should be pruned
to within 2 or 3 buds of the base
to make them break strongly

The cuts
need making
properly,

Cut
leaving
snag

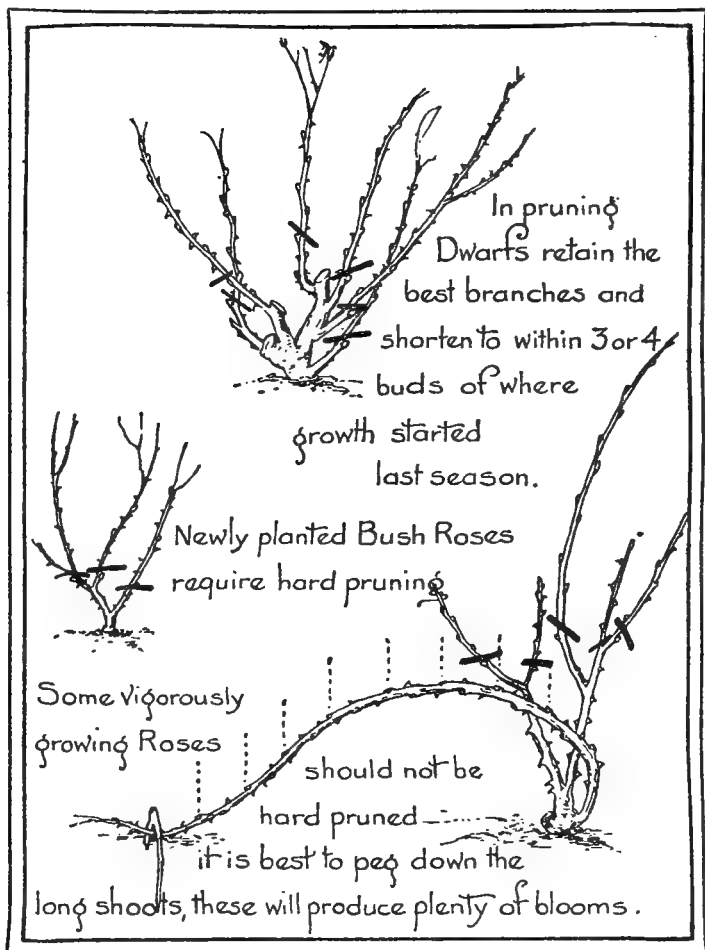


Too
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Right

A well sharpened knife,
is essential for making
clean pruning cuts.



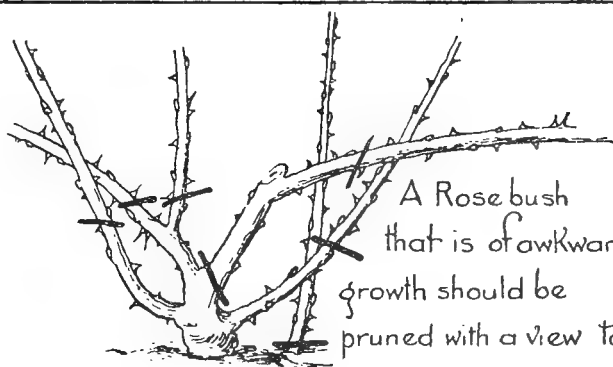
in them or in other details of garden work ; all the pruning they do is to trim back the tips of the branches in spring and to cut out dead shoots. Yet the results they achieve are often of astonishing excellence ; the bushes grow vigorously and bloom profusely, though the flowers are usually more remarkable for quantity than quality. It must be added that the Roses planted by such folk are limited to

a few vigorous varieties that resent hard pruning, such as Hugh Dickson, Frau Karl Druschki, and Caroline Testout, which are almost certain to succeed under those conditions. It is, however, probable that many other Roses would do equally well if more lightly pruned than is usual.

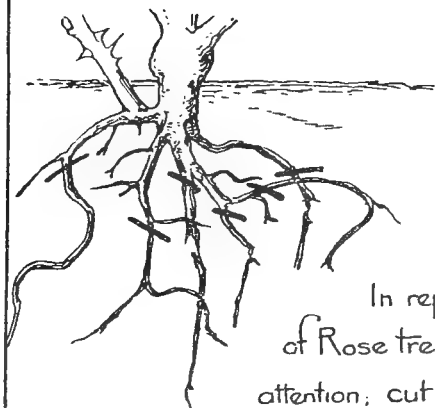
By pruning a Rose tree we make it conform to the object we have in view. If we prune the branches

severely each spring we shall have a comparatively low bush that will yield blooms of the largest size and the best shape that particular variety can produce. If, on the other hand, we prune the branches lightly or scarcely at all we shall obtain a bigger and less shapely bush, bearing more numerous flowers probably lacking in size and beauty of form.

When to Prune Rose Trees.
When ought Rose trees to be pruned? From the end of March to the middle of April is the usual time to prune bushes or dwarfs. Rambler Rose trees should be pruned in late summer or as soon as the flower display is over. Climbing, as distinct from rambler, Roses should be pruned in autumn and looked over again in spring. At



A Rose bush that is of awkward growth should be pruned with a view to improving the shape



In replanting, the roots of Rose trees should have attention; cut away any that may have been broken or damaged and shorten any that may be overlong

the autumn pruning of rambler and climbing Roses such old branches or parts of them as can be replaced by fresh shoots should be cut out. In spring the only pruning to be done is to cut off the soft or damaged ends of the branches and to shorten the side shoots on the old branches that remain—the side shoots are cut back to two or three buds.

Those who live in the colder districts of the country are well advised to prune their bush Roses during the first three weeks of April, the Tea varieties being left until the last. In milder districts the hybrid Perpetual Roses, such as Ulrich Brunner, Frau Karl Druschki, Mrs. John Laing, and Captain Hayward, may be pruned towards the end of March; the hybrid Teas, such as Ophelia and General McArthur, the first week in April; and the Teas—Madame Antoine Mari, A. Hill Gray, and Marie Van Houtte, for instance—the second or third week in the month.

The earlier the Rose trees are pruned the sooner will they bloom. If they are pruned lightly they will flower earlier than if pruned severely. To have Roses in full bloom in June light pruning is necessary; if they are to be at their best in July hard pruning is required.

A Mistake to Prune too Early. It is a mistake to prune Rose bushes earlier than at the times named. The earlier they are pruned the sooner will they start to make fresh growth, and in the event of frosts late in April or early in May the new shoots are liable to be damaged and the first display of bloom may be spoilt. If most of the pruning is carried out during the first fortnight

in April the fresh shoots generally make uninterrupted progress.

Summer Pruning is an Important Detail. This is practised continuously during the summer months and consists in shortening the shoots that have flowered. It is not enough merely to pick off the faded blooms; the shoot or branch ought also to be shortened by cutting at least 3 or 4 inches off the top. This will induce the bush to make fresh and vigorous shoots which in turn will yield a later supply of bloom.

Many modern Roses continue to bloom more or less throughout the summer months, and as the blooms fade the shoots ought to be pruned back a few inches—the longest can be shortened by as much as 6 inches. They must not, of course, be cut back anywhere near the base, otherwise the lowest buds, which will produce the following year's flowering shoots, will start to grow and the "wood" they produce will not be of such good quality as the original shoot and it may not become thoroughly "ripened."

An Important Point. One of the most important points the amateur must bear in mind when pruning his Rose trees is this: it is only the growth of the previous summer that is pruned, not the older, woody branches. Therefore when the advice given is to "prune to within four buds of the base" it is the base of the last summer's growth that is meant, not the base of the bush. It is necessary to make this point clear, because I have known beginners cut the branches of their Rose trees almost to the ground level instead of merely pruning the past summer's shoots, as they should have done.

The Ideal Rose Bush is one in which a limited number of branches, say five or six, grow in an outward direction and from which all dead and weakly shoots have been cut away. Having got rid of all useless shoots, the next thing to do is to cut the remaining ones to a bud that points away from the centre, so that the ensuing shoot will grow in an outward direction, thus keeping the bush open.

The cut ought to be made immediately above a bud and in a slanting direction ; it should begin just above the top of the bud on the same side of the shoot. After having made the cut it is wise to dress it with styptic or painter's knotting to prevent damage by the maggots of the pith-boring moth.

Prune to Sound Wood. One often sees Rose bushes pruned in such a way that they will be full of snags or pieces of dead wood in summer. Instead of the shoot being cut off level with the top of the bud it is cut an inch or more above it ; this part of the branch dies and the snag remains.

After a severe winter Rose bushes may suffer a good deal of damage which may not be apparent on a superficial examination. For this reason it is always wise when cutting back a branch to look at the pith. If this is black or dark brown the branch is certain to die back beyond it. Pruning must be to a point at which the pith is not discoloured. This may lead to the branches being pruned more severely than was intended, but that is unavoidable ; it is essential to cut back to what the rosarian calls " sound wood." If that is not done at pruning time in spring it will become necessary later in the

season when the branch has died back to that point.

The pruning tools required are a saw for the removal of thick, hard, and old branches, and a pair of secateurs or a pruning knife. Most rosarians use the secateurs nowadays in preference to a knife. The work can be done as well with that tool and far more expeditiously. It is worth while buying a really good pair of secateurs, for with care they will last for years and do their work well. Needless to say, they ought to be sharp. If the shoots are cut with a blunt pair of secateurs or a blunt knife they will be bruised, and that may cause them to die back. A clean cut can be made only with a sharp instrument.

While the shoot or branch is being cut with the right hand it ought to be held firmly with the left hand, otherwise there is a danger of its breaking off at some point lower down and possibly at the base. Some varieties of Roses are very prickly, the stems being armed with strong, sharp spines. For this reason it is wise to wear a pair of gloves while pruning. Very thick gloves are not very convenient, for they interfere with the use of the pruning tool, but they must be made of strong material through which the spines will not penetrate easily.

Pruning Dwarf or Bush Rose Trees. Let us first clearly understand what is meant by a dwarf or bush Rose tree. It is so called to distinguish it from a standard or climbing Rose ; the bud is inserted on the stock close to the ground, and the height to which the plant grows depends on the vigour of the variety. The Rose bush may reach a height of 2 feet or even less, or it

may be 3 feet, 4 feet, or 5 feet high, according to the growth of the particular Rose and the kind of pruning practised. But whatever height the tree reaches, it is still known technically as a dwarf or bush because the bud from which the whole plant develops was inserted low down near the ground level. In a standard Rose the bud is inserted at the top of a stem that varies in height from 2 to 2½ feet to 3 or 4 feet, or even 5 feet in weeping standards.

The first thing to do in pruning a bush or dwarf Rose tree is to cut out all dead or decaying shoots or branches; they affect the health of the tree adversely. The next thing is to prune away all very weakly shoots, those that tend to crowd the centre of the bush, thus hindering the development of stronger branches, and are in themselves useless because they are not strong enough to bloom.

These details having been attended to, we have then to deal with a bush that possesses a limited number of branches varying in vigour according to the variety of Rose in question. Some will be as thick as one's little finger, others no thicker than a lead pencil. The problem to be solved is to what extent these remaining branches are to be shortened, and that depends on the object in view and the characteristics of the variety.

Orthodox Way of Pruning. Let us take first the orthodox method of pruning to be recommended when the purpose is to provide a generous supply of flowers of fair size and quality that will make a good display in the garden. The shoots or branches are cut back to varying heights according to their vigour,

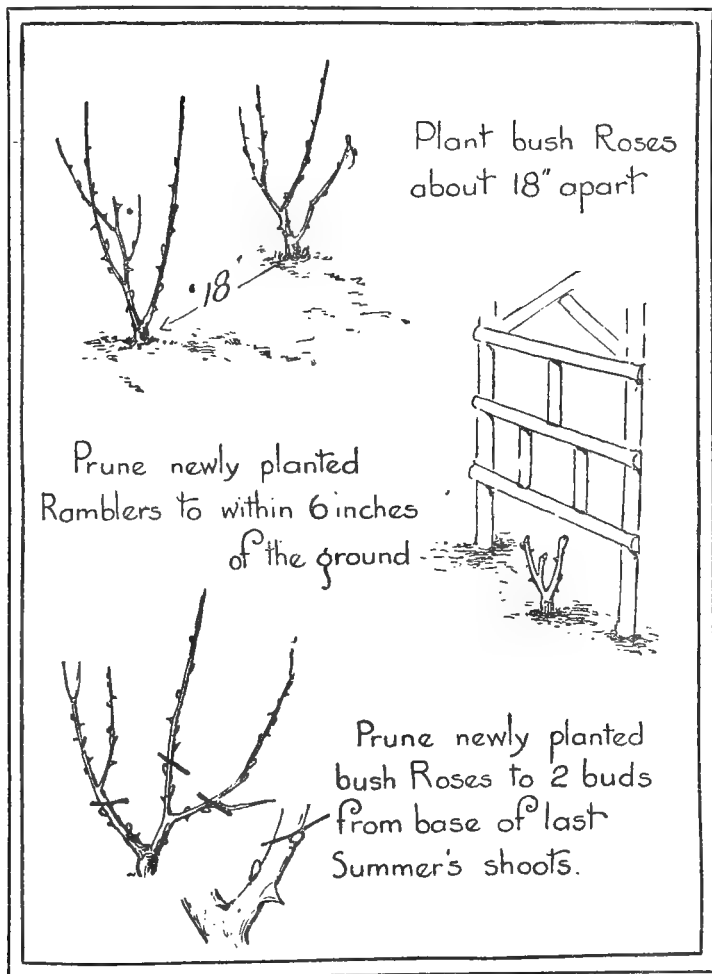
the strong ones being pruned more lightly than the weak ones. Good general advice is to shorten the strongest to within from four to six buds of the base of the previous summer's growth, those rather less vigorous to three or four buds, and the weakest to one or two buds.

There may be among the Roses some of extra vigorous growth that are best suited by the pegging down method, but only those of unusual vigour can be dealt with in this way. The advice given above applies to most of the decorative or garden Roses in general cultivation at the present time; most of them belong to the Hybrid Tea class, familiar representatives of which are Ophelia, Madame Leon Pain, Etoile de Hollande, and General McArthur.

Now let us consider some of the variations from the orthodox method that are recommended from time to time. It is said by some rosarians that the usual method of pruning Rose bushes is too drastic, that it is a mistake to cut away so much growth from the bushes annually, and that they would develop into finer specimens, yielding a greater number of blossoms, if pruned more lightly. It is difficult to give a decided opinion on this matter, for the growth of Rose trees varies so greatly in different varieties, in different localities, and according to the kind of soil in which they are planted. The beginner who likes to ensure a fair quantity of blooms can scarcely do better than follow the advice given already, but if he is of an experimental turn of mind then he should practise different methods and take note of the result.

Some varieties will respond to light pruning better than others. It is entirely a matter for experiment in the reader's own garden, for it

When Rose bushes are grown in formal beds on a lawn, for example, it is necessary to adopt a uniform system of pruning, otherwise the



does not follow that a Rose which in one garden grows into a large bush if very lightly pruned will do the same in another. It is safe as a rule to prune a bush lightly if it makes vigorous growth.

Rose beds would contain bushes of various sizes and their appearance would be spoilt. In planting a formal Rose garden it is wise to fill each bed with one variety and to prune them on orthodox lines,

shortening the previous summer's branches to within from one or two buds to five or six buds, according to whether they are weak or vigorous.

In the following lists an attempt has been made to classify some of the most popular of present-day Roses according to the kind of pruning they need in the average garden.

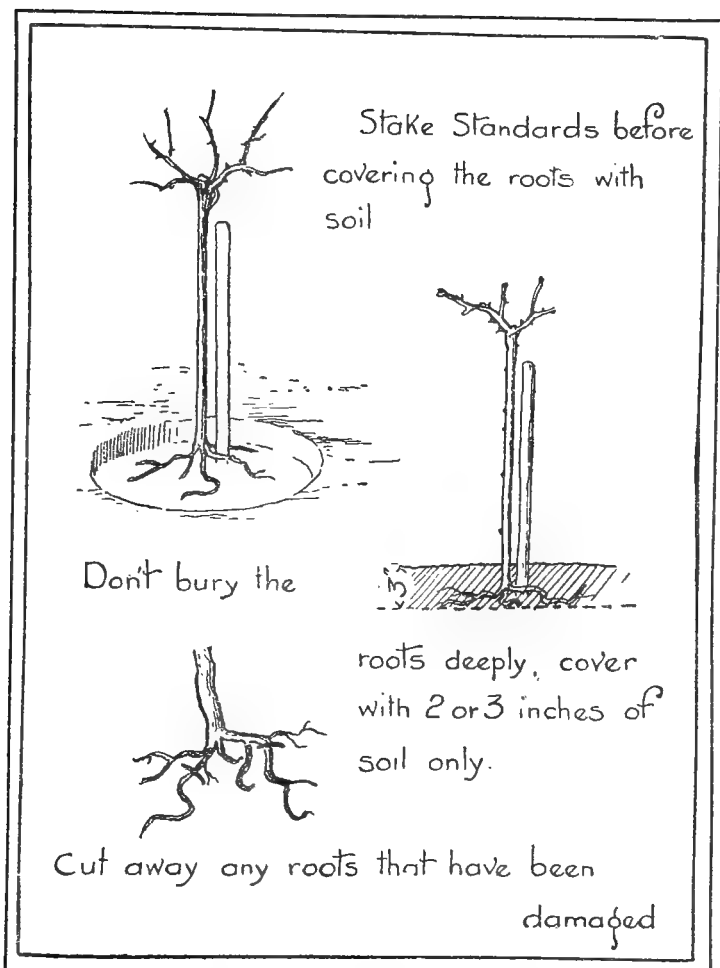
Special Instructions. The following varieties are best dealt with by cutting out all thin, weakly shoots, pegging down the vigorous branches of 4 or 5 feet in length, and shortening those slightly less vigorous by one half or so : Avoca, Clio, Frau Karl Druschki, George Dickson, Hugh Dickson, J. B. Clark, H. E. Richardson, La Tosca, Mrs. Stewart Clark, Margaret Dickson, Ulrich Brunner, W. A. Richardson (when grown in the open).

These Roses will make fairly large bushes if after the dead and very weakly shoots have been cut out the remaining ones are lightly pruned ; the ends of the branches should be cut off if they are soft or have been damaged by frost. On the other hand, if it is desired to keep them as reasonably dwarf bushes, 2 feet high or so, it can be done by pruning them in the orthodox way—that is to say, by shortening the strongest to within five or six buds and pruning weaker ones more severely. Irish Elegance is perhaps an exception, for it will reach a height of 5 feet if lightly pruned, and indeed makes a good covering for a pillar if planted in well-prepared soil : A. Hill Gray, Aspirant Marcel Rouyer, Betty Uprichard, C. E. Shea, Clarice Goodacre, Caroline Testout, Dean Hole, Dorothy Page Roberts,

Duchess of Wellington, Irish Elegance, Irish Fireflame, Isobel, Joanna Bridge, K. of K., Harry Kirk, Lord Charlemont, Madame Leon Pain, Mélanie Soupert, Mrs. Herbert Stevens, Mrs. J. Laing, Pharisaer, Prince de Bulgarie, Red Letter Day.

In this group the Roses are of free growth, though they do not make such strong shoots as those in the previous class. They remain bushes about 2 feet high and respond admirably to the orthodox pruning—shortening the strong shoots to from four to six buds and the weakest from one or two to three or four buds : Emma Wright, Etoile de Hollande, Florence Izzard, G. C. Waud, Golden Emblem, Gorgeous, Gustav Grunerwald, General McArthur, Frances Gaunt, Hadley, Hawlmark Crimson, Henrietta, Hoosier Beauty, Hortulanus Budde, Independence Day, Lamia, Lady Hillingdon, Lady Pirrie, La France, Lady Alice Stanley, Lieutenant Chauré, Los Angeles, Madame Abel Chatenay, Mabel Morse, Madame Ravary, Madame E. Herriot, Margaret Dickson Hamill, Mrs. Henry Morse, Mrs. Henry Bowles, Mrs. Wemyss Quin, Miss Van Rossem, Mrs. Alfred Tate, Madame Butterfly, Ophelia, Souvenir de Georges Pernet.

Although the growth of these Roses varies according to the kind of soil and the locality in which they are planted, generally they may be classed as less vigorous than those already named. The usual way of pruning them is carefully to cut out dead and very weakly shoots and to shorten the remainder to from two to four or five buds, according to the vigour. Good cultivation and well prepared



ground are necessary. It is contended that even some of the weak-growing Roses will, if very lightly pruned, make better progress than if pruned in the usual way; if any of the varieties are not satisfactory under the treatment recommended the reader is advised to let them grow as they will, merely taking the precaution to cut out all dead

shoots and those that are so weak as obviously to be useless.

Angele Pernet, Captain Kilbee Stuart, Château de Clos Vougeot, Christine, Colonel O. Fitzgerald, Countess Clanwilliam, Donald McDonald, Lady Inchiquin, Lady Roberts, Liberty, Madame Antoine Mari, Madame Hoste, Madame Second Weber, Molly Sharman

Crawford, Marquise de Sinety, Melody, Mrs. Bertram Walker, Mrs. David McKee, Mrs. E. Hicks, Mrs. E. Powell, Mrs. George Norwood, Mrs. W. J. Grant, Princess Mary, Richmond, Ruth, Sovereign, Souvenir de Claudius Pernet.

This classification of varieties of Roses according to the pruning they need must be regarded as a general guide only. Roses vary so much in different gardens that it is impossible to lay down hard-and-fast rules and to advise that they be followed slavishly. For instance, in one garden a variety may grow much more vigorously than in another, and it must be treated accordingly. If, however, the amateur regards this guide as correct until by his own experience of the growth of the Roses in his garden he finds it necessary to prune differently, he will at least be able to make a satisfactory beginning and afterwards his own experience will teach a good deal.

Then there are the very vigorous Roses which develop naturally into large bushes. These do not need systematic pruning, since it is impossible to keep them dwarf except at the risk of having them full of flowerless shoots. If they are pruned severely in spring in the way that the ordinary bush or dwarf Roses are pruned they will merely continue to make vigorous growth and the blossoming will be sparse.

In the spring following planting it is wise to cut out weak shoots and to shorten the remainder to within 12 to 15 inches of the base. The result of this treatment will be that few blooms will be obtained the first summer, but the plants will make strong growths for the following year's blossoming. In sub-

sequent years the correct practice is, in autumn, to cut out a few of the oldest branches or parts of them and allow the new ones to replace them. In spring it will be necessary to look over the bushes for the purpose of cutting out thin, weakly shoots and shortening the side shoots on the old branches.

The following Roses thrive under this system of pruning: Conrad Meyer, Danaë, Grüss an Teplitz, Moonlight, Moyesii, Pax, Penzance Briars, Prosperity, Rugosa (Japanese Briar), Sweetbriar.

Prune these Roses Lightly. If, as has been said, the nerve system of a plant is more sensitive than that of a human being, how our poor Rose trees must suffer when, armed with secateurs or pruning knife, in the spring of each year we proceed to cut them down to within a few inches of the ground. I am still a believer in hard pruning all newly-planted Roses, as their root system has not become established, and by pruning any premature strain on the roots is prevented, root and branch growth making progress together. Pruning also encourages strong basal growths as early as possible and thus helps to build up a vigorous, healthy plant.

In succeeding years the question of pruning has to be viewed from a different standpoint. The root system has by then become established, and to prune hard means giving a severe check to the roots. It also discourages the formation of new roots which are vital to the development of top growth. With this theory in mind, for the last few years I have pruned some varieties very lightly, and the results have proved that not only

is the vigour of the plant increased, but far more blooms of better shape have been produced, and in many cases they have been up to exhibition form. I was led to try the experiment by seeing some bushes of the Rose Lady Hillingdon that had been left practically unpruned for a few years. They were full of vigour and bearing many fine blooms on long, purple-coloured stems so characteristic of the variety.

My first tests were made with the Roses Clarice Goodacre and W. C. Clarke, both vigorous varieties. The results exceeded my expectations. In two years' time the former had grown into a bush 5 feet in height, full of strong growths bearing bunches of bloom which I thinned out. The outcome was that I had dozens of fine shapely blooms, which made me more than ever pleased with this somewhat neglected Rose. The result was similar with W. C. Clarke, but as this is of somewhat spreading rather than upright habit of growth the plant was not so tall, but it developed into a bush of good size.

Pruning Single Roses. The single Roses, such as Irish Fireflame, Irish Elegance, Irish Afterglow, etc., I have also treated similarly, with equally good results. One great advantage of pruning these single Roses lightly is that they come into bloom much earlier and at a time of the year when the temperature is lower; thus they last longer in beauty. This type of Rose is very disappointing in hot weather, when the blooms open so quickly and fade rapidly. If they are induced to bloom in June they remain in the bud stage (in which they are lovely) for quite a long time and

are then fine for cutting and button-holes. Lulu is another variety that is excellent when lightly pruned.

Many growers will ask, "But do you not do away with the formation of strong basal growths which are essential to the rejuvenation of the plant?" I feared the same thing, but found that the root action was so strong that good shoots were thrown up from the base, thus allowing the oldest growths to be cut away the next year, thereby thinning out and maintaining the symmetry and vigour of the trees.

Pruning Pernetiana Roses. I am convinced that the Pernetiana race of Roses resents too free use of the knife. Unfortunately, these Roses have a habit of making thick, pithy growths late in the season; they fail to "ripen" properly, with the result that many of them die back in the winter. In this case there is no alternative but to cut back to sound wood where the pith has not been turned brown. Otherwise the less these Roses are pruned the better. The vigorous growth made by Golden Emblem, Mrs. Wemyss Quin, the Queen Alexandra Rose, Ruth, and others of this class when lightly pruned is astonishing. I have instanced the case of Rose Lady Hillingdon, which is a Tea, and I am sure we prune this class of Rose too severely as a rule.

Pruning Weakly Rose Trees. We have always been told to prune weakly Rose trees much harder than vigorous ones. This again is all right in theory, but I have tried the effect of leaving apparently poor ones almost untouched with the knife to see if a fair amount of branch growth could not be obtained, which would react favourably on the root system and

so build up a better plant. I was led to do this by my experience with the Rose called *America*, which had made poor growth out of doors until I pruned it lightly, with the result that several promising shoots grew from near the base.

To sum up—if we have limited space, and wish to grow as many Roses as possible, we must prune as usual, otherwise our Rose beds will become a tangle of growths. If, on the contrary, we can give them ample space, let us try to build up some real Rose bushes that will be a sight worth seeing when in full bloom, and by the judicious thinning out of the buds we can obtain a fair percentage of large blooms quite fit for exhibition. A big, shapely Rose bush that blossoms freely is a glorious sight, and the amateur will reap a rich reward if he experiments instead of following the copybooks slavishly.

Pegging Down Vigorous Rose Trees. Some Rose trees, although commonly classed as bush Roses, are so vigorous that obviously it is an incorrect practice to prune them severely. When the beginner has pruned them in the orthodox way for one or two years and has been rewarded by still more vigorous branches and very few blooms, he will begin to wonder whether his practice is the correct one and must come to the conclusion that he has done the wrong thing; and he will be right in that assumption.

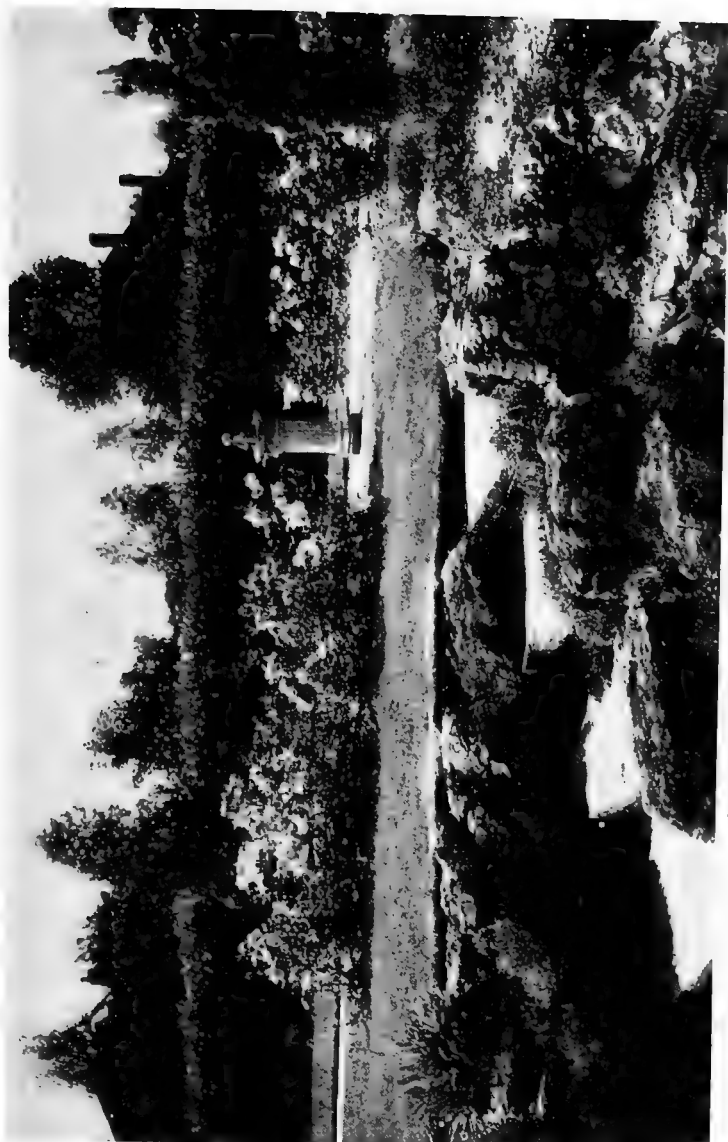
In dealing with Rose bushes that produce branches 5 or 6 feet long in one season it is a great mistake to prune them hard. That is simply to cut away the shoots that would have yielded a harvest of flowers, while it does nothing to check the development of the strong

branches; as a matter of fact, the more severely they are pruned the more vigorously do they grow.

What, then, is to be done? The proper way to deal with these varieties is in spring to adopt the practice known as "pegging down." Thin, weakly shoots are first cut out, and the tips of the others are cut off if they are thin or soft. No further pruning is done unless of course any of the branches are dead or decaying; they ought to be cut right out then, for they do harm to the tree.

The actual work of pegging down is simple enough, for it consists merely in fastening the end of the branch in the ground. The result is to bend the branch in, roughly, the shape of a semicircle or low arch. The best way of securing the end of the branch in the ground is by means of a stout wooden peg. The precaution ought also to be taken of tying the end of the branch securely to the peg and to knock the latter firmly in the soil, for if it were suddenly to spring up when the grower was tending his plants it might cause an injury.

Effect of Pegging Down. During the summer all such pegged-down branches will start into growth at almost every bud throughout their full length and most of the shoots will produce flowers, with the result that a first-rate display is obtained. It must have been noticed by all who grow Rose trees that if a branch is left upright it will start to grow only at the top, remaining bare of shoots at the base. By pegging down the branch in the way described the lower buds are forced into growth, and the result is seen in shoots and flowers all along it.



Steps lead from a sunk rock garden to the rosery and lawn.



One way of laying out the garden near the house. Stone steps lead to a lawn and a wall planted with flowering plants.



Rock and water gardens associate happily. Iris, Musc, Spiraea and some of the hardy Primulas thrive on the moist soil by the water-side



Snapdragon or Antirrhinum is the most popular of all summer bedding plants ; it remains in bloom for many weeks if the dead flowers are picked off. Here are seen beds of both tall and dwarf varieties, the latter used as an edging.

Pruning after Flowering. What shall be done with the pegged-down branch after the flowers are over? Normally the Rose tree will produce other vigorous branches to take the place of the old ones which have blossomed, and the latter can therefore be cut right out when they are no longer of any value—in other words, when they have ceased to bear flowers. Sometimes, however, a new and vigorous shoot will start to grow on the pegged-down branch at some distance from the base and only the part of the old branch above that point can be cut away.

Above all things it is necessary to take care of fresh, strong shoots for another year. If by some mischance these are not forthcoming, then the old pegged-down branches must be allowed to remain, and in the following spring the side shoots, those that produced blooms the previous year, are shortened to within two or three buds of the base. Such blooms will not be so fine as those obtained directly from the branch, but they will be numerous. It is, however, rarely that some new branches do not develop.

It is clear that Rose bushes treated in this manner take up a good deal more room than those pruned in the orthodox way, and if the space cannot be spared for them then the alternative is to grow varieties that respond to more severe pruning.

Roses that May be Pegged Down. Among the Roses that grow so vigorously that they cannot be pruned severely every year without being spoilt, yet thrive splendidly when their branches are pegged down, are Hugh Dickson,

George Dickson, Frau Karl Druschki, William Allen Richardson, Lady Waterlow, Gruss an Teplitz, La Tosca, Avoca, H. E. Richardson, J. B. Clark, Mrs. Stewart Clark, Zéphirine Drouhin (the Thornless Rose), Sarah Bernhardt, Gloire de Dijon, and the old variety, Clio.

As these long shoots or branches are liable to be blown about and damaged, and to loosen the hold of the tree itself in the ground, it is essential to make them secure before stormy weather sets in in autumn. They should be tied to temporary supports.

Pruning Newly Planted Rose Trees. Whether severe pruning annually throughout the life of a Rose tree is beneficial or not—and there is a good deal to be said for both points of view—there can be little or no doubt that it is wise to prune newly planted Rose trees severely. It has often been said that the Rose tree you buy from the nurseryman is valuable or otherwise according to the condition of its roots. If these are fibrous and numerous then the Rose tree may be expected to thrive; if, however, they are thick and fibreless and few in number the tree's chances are not so good, or at least it will take longer to become established.

The branches on bought Rose trees are not regarded as of permanent value, for the usual practice is to cut them back hard, leaving only two or three buds on each, and from these an entirely new Rose bush is built up in due course. This seems very drastic treatment, but it pays; if the plant is healthy the few remaining buds will give rise to strong shoots that

form the foundation of a satisfactory bush. In later years pruning may be severe, moderate, or light, according to the objects of the grower and the variety dealt with, but the first pruning should be severe, thus almost the whole of the top growth of the Rose bush will be renewed.

This severe cutting back has the effect of forcing the lowest buds to break into growth and ensures the correct beginning of a shapely bush, whereas if the shoots are left long, growth will be toward the top only, and the chances are that the lower part will remain bare.

Most Rose trees are planted in autumn, and the first pruning is in March or April of the following year. Many trees, however, are planted in spring, and it is imperative that these be pruned severely if they are to have a chance of making good growth the first summer. But the beginner will be well advised to prune all his newly planted Rose trees hard and not be tempted to leave the branches 6 or 8 inches long, as many inexperienced amateurs do.

Pruning Newly Planted Rambler Roses. Even rambler Roses ought to be pruned hard in the spring following planting. All the stems should be cut down to within 6 inches or so of the ground. If that is done the tree will send up several lusty young shoots in early summer that will be 6 feet or more high and will have reached the top of the support by the end of the season. If it is wished to leave some of the old stems in order to have a few blooms the first summer, it may be done with possibly little disadvantage; most of the rambles are so vigorous that they are likely

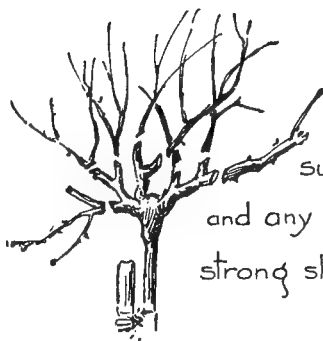
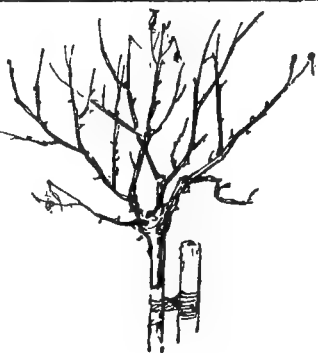
to make satisfactory growth whichever method is adopted. But the safest plan is to cut down all the stems, for the poor flower display that will result from the other method is scarcely sufficient reward for the slight risk of indifferent growth that is run in leaving the old stems unpruned.

What one has to make sure of is vigorous growth that will blossom the following summer, and that will certainly result if the stems are cut down; the new shoots may be neither so numerous nor so strong if the old stems are left for the sake of the few blooms they will produce. Even if the old stems are left the flower display is certain to be an indifferent one, and it is far better to sacrifice these than to run the risk of interfering with the vigorous growth of the Rose tree and thus jeopardise next year's blossoming.

These Roses Need Special Care. The pruning of newly planted Rose trees of the various climbing "sports," e.g. Climbing Ophelia, Climbing Mrs. Grant, Climbing Richmond, and so on, needs special care. These Roses are accidental variations or "sports" from the dwarf or bush Roses of the same name, and if they are pruned incorrectly it is possible that they will revert to the dwarf or non-climbing type.

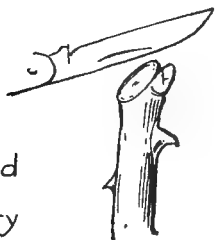
When newly planted, these Roses must not be pruned severely, otherwise they may never climb at all. The branches ought to be left almost untouched. If the ends are soft, thin, or shrivelled they must of course be cut off, and if the tree possesses four or five stems one of them may be shortened to within 6 or 8 inches of the ground, but no further pruning is necessary or

Standard Roses
usually need drastic
thinning and pruning
at the end of March



Remove weakly &
superfluous growths
and any dead wood, cut back
strong shoots less than weak
ones

A clean cut
from below a bud and
upwards is necessary
for good pruning



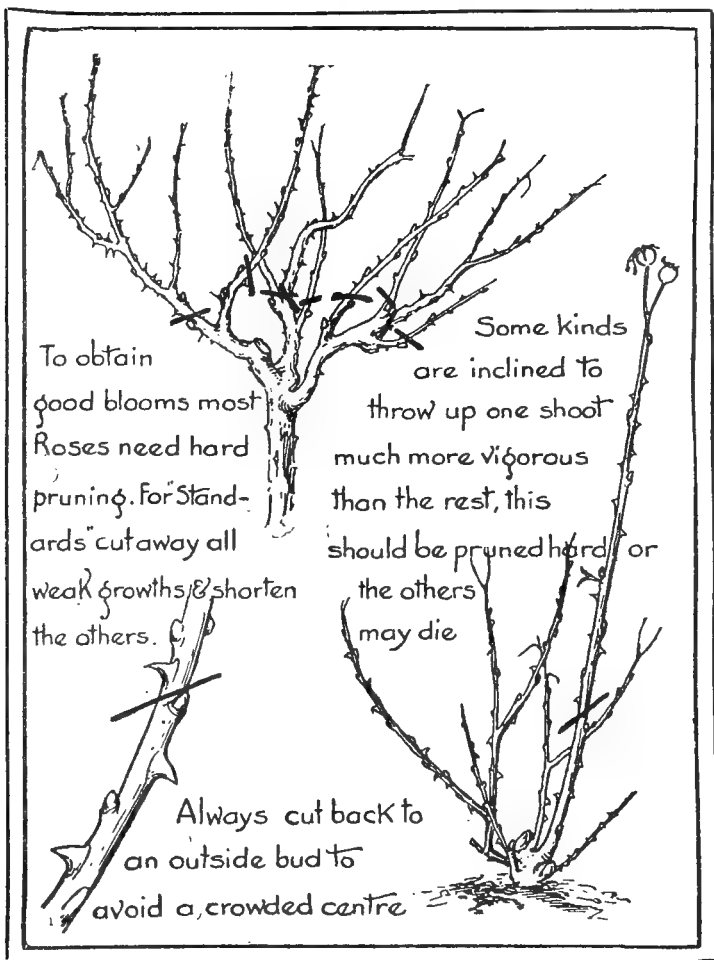
advisable. Later in the year or the following spring it will be possible to cut out one or more of the old stems if fresh, vigorous shoots have developed meanwhile. But it is of no avail to attempt to force these climbing "sports" to produce fresh stems by pruning the existing ones severely; that method is likely to prove very disappointing, though

occasionally it may succeed. The risk, however, is too great, and readers are advised to wait until the tree has made good growth before the old stems are cut out. In subsequent years the method of pruning is to cut away old stems or parts of them to the extent that they can be replaced by other and younger ones.

Pruning Standard Rose Trees. If the pruning of bush or dwarf Rose trees is understood there will be little difficulty in dealing with standard Rose trees, for these are the same varieties budded on top of a tall stem instead of near the ground. Thus if the amateur knows how to prune Rose Madame Abel Chatenay, for instance, when this

variety is grown as a dwarf or bush, he will be able to prune it equally well in standard form.

Newly planted standard Rose trees ought to be pruned severely, just as was advised for the dwarfs, but in subsequent years fairly light pruning seems to suit most of them best. In planting a collection of standard Roses it is necessary to



choose varieties that are suitable for the purpose, for some make better "heads" than others. The free-growing varieties give greatest satisfaction; these, if pruned lightly, make good heads of branches in the course of time and are then very handsome.

Although it has nothing to do with the actual work of pruning, a hint that was published in *Popular Gardening* from a reader some time ago is worth mentioning because it appears to show why some, and probably many, newly planted standard Rose trees fail. Owing to the root disturbance occasioned by transplanting the sap does not flow freely up the long stem of the tree, and as a consequence the head of branches is starved for the time being, and by the time the roots are growing freely the branches may have become so weakened as to be beyond recovery. The plan adopted by this correspondent was to wrap cloth round the stem after planting the trees and to keep it always moist by syringing when necessary. This had a remarkable effect on the trees, and was the means not only of saving some of them from total failure, but it helped them to grow freely and to make good "heads."

Thinning-out weak and dead shoots from the standard Roses is a detail of importance and is the first thing to be done in pruning; the remaining branches are then shortened, and the problem to solve is how far they should be cut back. In the spring following planting they ought to be cut within two or three buds of the base of the previous summer's growth, not any lower, as I have seen done. In subsequent years it is usually

sufficient to shorten the past summer's shoots by about half, or even less than that when dealing with such as Hugh Dickson, Frau Karl Druschki, Caroline Testout, La Tosca, and other free-growing varieties. It is important always to cut to a bud that points outwards so that a well-balanced head of branches may result and there will then be no risk of the centre being filled up.

The pruning of weeping standards, which consist of rambler and climbing Roses budded on the top of tall stems, is carried out much in the same way as when those Roses are grown naturally. That is to say, at the end of the summer or early in autumn such old branches or parts of them as can be replaced by young shoots of the past summer's growth are cut out, the latter taking their places. As a rule fresh shoots are not produced so freely as when the rambler and climbing Roses are grown naturally on arches and pillars, and care must be taken not to cut out more old wood than can be replaced by young shoots. Though the latter will yield the finest display of bloom the following year, the side shoots on the old branches will also flower if they are cut back in spring to two or three buds.

Pruning Rambler Roses. These are the easiest of all Rose trees to prune. It is but necessary to realise that the best display of blossom is provided by the shoots or stems which grew during the previous summer in order to understand exactly how the pruning should be carried out. The only difficulty likely to confront the beginner will arise in dealing with different varieties, because they vary a good

deal in their habit of growth, therefore they cannot all be pruned by rule of thumb ; each one must be dealt with as it needs.

Let us take a well-known and typical rambler Rose, Dorothy Perkins, Hiawatha, or American Pillar. So far as their pruning is concerned any one of these may be taken as an example, for their manner of growth is similar though they vary in vigour. They produce fresh shoots or stems from somewhere near the base, often at the ground level, every summer, and it is these that will yield the chief flower display the following year. Thus the pruning consists in cutting out the old stems when the blooms are over ; the fresh shoots are then tied to the support to replace them. The work of pruning is carried out at the end of summer or early in autumn, for the ramblers are summer flowering only, though some of them may and do bear a few blooms in August and September.

If the new shoots are few in number—and that may happen after a hot, dry summer—it would be a mistake to cut out all the old stems, for these will produce flowers, though they will not be so numerous or so fine as those from one-year-old stems. If any old stems are left the side shoots on them must be shortened to three or four buds in spring.

Let us take another rambler Rose of a different type of growth from those already named — Alberic Barbier. The branches of this variety become thick and woody at the base and as a rule the fresh shoots arise on them at some distance from the ground. Thus the pruning needed is very similar

to that advised when dealing with the climbing Roses, except that parts of old branches can usually be removed much more freely because there are more new shoots to replace them. The branches must be cut back only to where the new shoots arise.

Pruning Rambler Roses in Spring. In spring there will be more pruning to be done than when dealing with varieties of the Dorothy Perkins type, because of the greater number of side shoots on those parts of the old branches that were perforce allowed to remain ; these side shoots are shortened to within three or four buds of the main branches from which they sprang.

The most convenient way of pruning rambler Rose trees of the Hiawatha, Dorothy Perkins, and American Pillar type is to detach all the stems from their supports, lay them on the ground, cut out the old ones that can be spared, and then tie the fresh ones in position. This, however, cannot very well be done with ramblers that become woody at the base like Alberic Barbier.

When rambler Roses are grown as pillars and are trained on tall poles it is a good plan to shorten some of the stems in spring, thus ensuring flowers almost from top to base ; if all the stems are left of equal length the display of blossom will be chiefly at the top of the pillar.

It should be mentioned that the rambler Rose Emily Gray should be left unpruned for the first two or three years as it is "shy flowering." Subsequently the older branches may be cut out as they can be spared.

Pruning Climbing Roses. In considering the pruning of climbing Roses as distinct from rambler Roses, which are dealt with in another page, it is convenient to separate them into two groups; typical examples are Madame Alfred Carrière and Paul's Scarlet Climber in one group, and Climbing Caroline Testout and Climbing Richmond in the other.

The first group consists of vigorous climbing Roses belonging chiefly to the Hybrid Tea class, though a few of the varieties concerned are included in other classes. Typical examples in addition to those two named above are Gloire de Dijon, William Allen Richardson, Bouquet d'Or, François Crousse, and others of similar growth. In the cultivation of these Roses, whether they are planted against an arch or a wall, one is faced with the fact that they are liable to become bare of shoots and leaves at the base, with the result that in a few years they are rather unsightly. Correct pruning can do something to remedy this trouble, but as a rule it does not do away with it altogether. However, in the attempt to prevent the trees getting bare at the base we shall be in a fair way towards pruning them properly.

The chief thing to remember is that these Roses bear the best flowers and the greatest number of them on the branches of the previous summer's growth; the greater number of these the trees possess the finer will be the display of bloom. In pruning, therefore, we must cut out as many as possible of the branches that are more than one year old—just as

many, in fact, as can be replaced by younger ones.

When to Prune Climbing Roses. The best time to prune climbing Rose trees is in early autumn, when the last of the flowers has faded. As some varieties bloom more or less continuously it would be unwise to prune earlier in the season, as we should run the risk of cutting away shoots that might bear late summer or early autumn blooms. The extent to which those old branches which have bloomed can be cut out must be governed by the number of new ones of the current summer's growth that are available for tying in to replace them. The nearer the base of the tree the latter have developed the better, for the old branches can be cut right down to where the new ones started.

Bending Down the Branches. It happens frequently that the new shoot begins to grow part of the way up the old branch and not from the base of the tree, and the old wood can be cut out only at a point just above it. It is for this reason that the lowest branches are apt to get bare. This fault can sometimes be remedied by bending down (as low as it can be brought down without breaking) one of the branches, in the hope that it will be forced to start into growth at the base. Even if the method recommended does not altogether prevent the lower part getting rather bare it will at all events prevent the tree from becoming unsightly and will keep it full of fresh branches that will yield the maximum number of blooms.

If new shoots are produced in insufficient numbers to allow of old branches being cut out freely, the

only thing to do is to retain some of the latter, and in spring to prune their side shoots back to two or three buds. They will yield flowers, but these will not be so fine as those from the one-year-old branches.

Training Climbing Rose Trees.

The way in which climbing Rose trees are trained makes all the difference to their well-being. If the branches are allowed to grow upright and are more or less bunched together, shoots and flowers will appear only towards the top; if the lowest branches are trained as nearly horizontally as possible and the remainder in gradually rising tiers, so that eventually the tree is roughly fan-shaped, there will be less risk of bareness at the base, and the flowers will be more numerous and distributed more evenly.

When climbing Roses are grown for the purpose of covering a pillar or tall pole it is obvious that they cannot be spread out, but must be tied in perpendicularly; in such a case it is a good plan to leave some of the branches full length, to shorten others by one third, and one or two by as much as a half, for the purpose of having the pillar covered with leaves and flowers almost from top to bottom. This gives a better display than if all are the same length.

Pruning Climbing "Sports."

The second group of climbing Roses consists of climbing "sports" of various popular dwarf or bush Roses. It may be as well first of all to explain what a sport is: it is an accidental variation from the original variety and may take the form of a change in the colour of the flowers or a change in the habit of growth; a variety

that has hitherto been of dwarf growth may suddenly and for no accountable reason develop into a climber. If buds are taken from this and budded on a suitable stock the climbing habit of growth is perpetuated and we have a climbing variety of a Rose that formerly was known only to exist as a low bush. In this way such varieties as Climbing Richmond, Climbing Ophelia, Climbing Lady Hillingdon, and many more have been obtained.

The Meaning of "Sports." They are known as "sports" because they originated from an accidental change of growth in the bush variety of the same name; this began to climb and the climbing form was made permanent by budding. These Roses still retain the original name prefixed by the word "climbing," because they are identical in flower; the only difference between them and the dwarf varieties from which they sprang is that they grow tall and the others remain dwarf.

The advice already given in respect of pruning other climbing Rose trees applies also to the climbing "sports." They are perhaps rather more difficult to manage because they do not produce fresh shoots or branches so freely, but if the recommendations given earlier in this chapter are observed it ought not to be difficult to maintain them in a healthy condition. The chief point to bear in mind is in autumn to cut out all the old branches or parts of them that can be replaced by those of the past summer's growth.

In spring there is little further pruning to be done; its extent must depend on the way in which the

trees have passed through the winter. If the tips of the branches are soft and withered they must of course be cut off. If one or two old branches were left because there were not enough new ones to take their places it will be necessary to prune the side shoots on these to three buds.

One important matter concerning the pruning of the climbing "sports" must be remembered. It is the usual practice to prune newly planted Rose trees severely, but climbing "sports" must not be treated in this way or they may refuse to climb.

Pruning Various Other Roses. A few words may be said concerning the pruning of other types of Roses that are popular at the present time. The musk-scented shrub Roses are now widely grown; in the course of a few years they develop into large bushes and flower during summer and autumn. They need little pruning—in autumn they ought to be looked over for the purpose of cutting out a few of the oldest branches, or parts of them, to give more space for those of the past summer's growth. In spring it will probably be necessary to shorten the side shoots on the old branches, but no severe cutting back must be done.

The dwarf Polyantha or baby rambler Roses have been greatly improved during recent years, and there are now some excellent and showy varieties. If it is wished to keep them as low bushes the shoots may be pruned back to from four to six buds in spring after dead and useless pieces have been cut out. If, however, large bushes are wanted, the shoots should be shortened only slightly, but all very

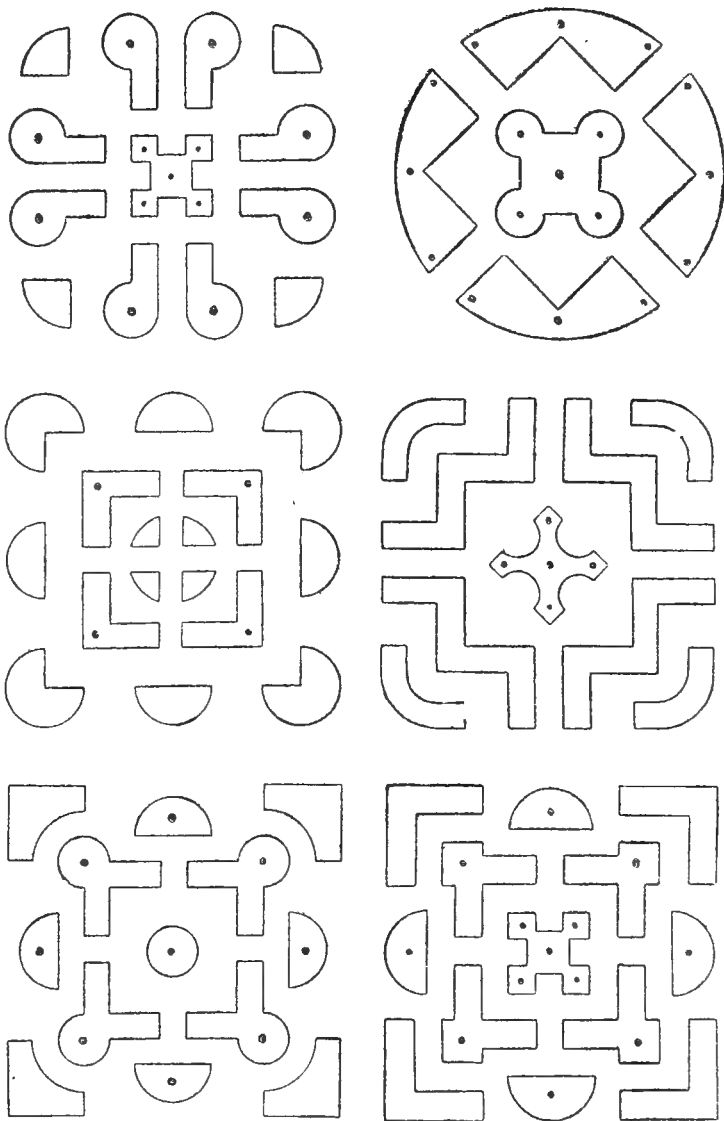
weak ones must be cut right out.

China Roses, Pernetiana Roses, and Tea Roses often need very little pruning, because their shoots suffer during the winter. When the dead and very weak parts have been cut away there is little left to be done except slightly to shorten those remaining. These classes of Roses usually thrive best when the sound shoots are pruned lightly.

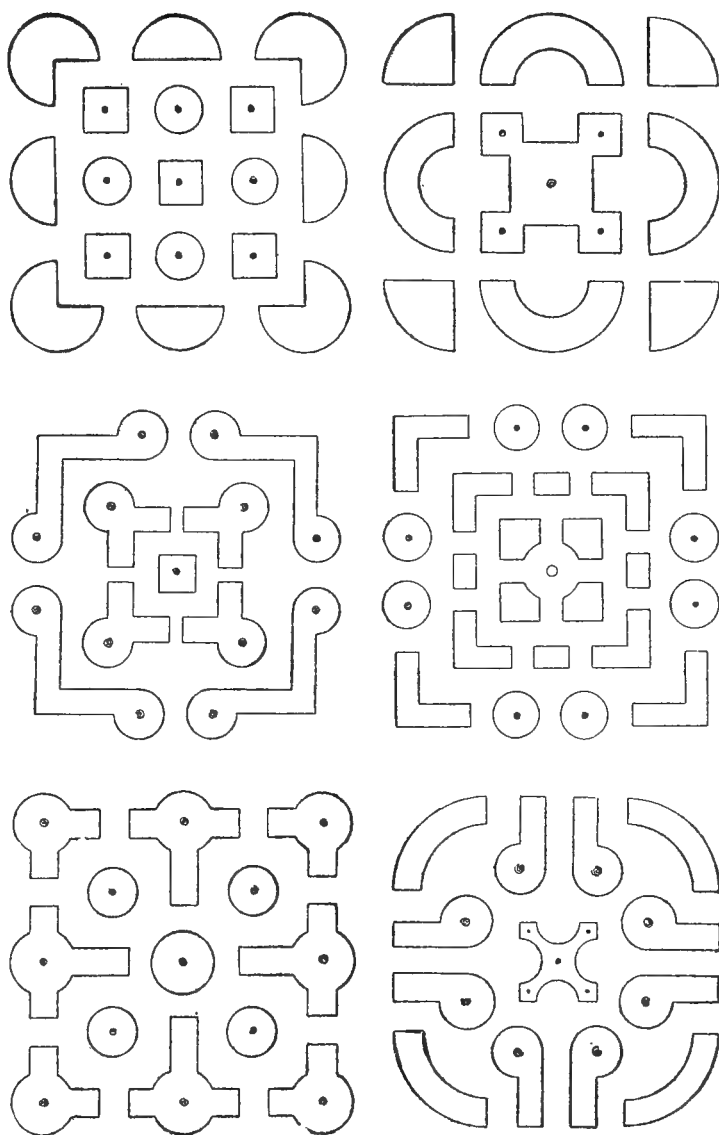
Moss Roses are not widely cultivated nowadays, possibly because there are so many other varieties that make a much more satisfactory show in the garden. The best way to deal with them is to plant them in well-prepared and enriched ground, to restrict the number of shoots by cutting out all weakly and small ones, and to shorten them by about one-half in spring.

The yellow Banksian Rose (which is more satisfactory than the white one) is sometimes used for planting against a sunny house-wall, and complaints of its non-flowering are frequent. The reason is generally found in incorrect pruning. Few flowers are likely to be produced for several years, but when the tree is well established and of considerable size it ought to bloom well if pruned properly. The small twiggy shoots are those that are most likely to blossom, and they ought not to be cut away. If pruning is found necessary to keep the tree within bounds, or to prevent overcrowding, some of the young vigorous shoots should be removed.

The Banksia Roses are rarely planted nowadays, but well-established specimens are beautiful when in bloom. Most amateur gardeners prefer the modern climbing Roses.



Designs for Rose gardens which may be laid out on a lawn, or the beds may be separated by gravel or paved paths.



Designs for Rose gardens. At the places indicated by dots standard or pillar Roses might be planted with advantage.

Twenty-four Roses to begin with : Shot Silk, Mme. Butterfly, Betty Uprichard, Etoile de Hollande, Mrs. Henry Morse, General McArthur, Frau Karl Druschki, Emma Wright, Ophelia, Mrs. A. R. Barraclough, Dame Edith Helen, Hugh Dickson.

The following complete an excellent selection of 24 Roses : Mabel Morse, Mrs. Henry Bowles, Lady Pirrie, Mme. E. Herriot, Los Angeles, Caroline Testout, Golden Emblem, Lady Inchiquin, Independence Day, Christine, C. P. Kilham, and Mrs. G. A. van Rossem.

Free-blooming Roses. The following are 24 first-rate Roses : Angèle Pernet, orange yellow; Betty Uprichard, salmon pink; Emma Wright, orange; Duchess of Atholl, orange, flushed rose; Florence Izzard, yellow; General McArthur, crimson; Chas. P. Kilham, orange scarlet; Clarice Goodacre, ivory white; Etoile de Hollande, crimson; Hadley, dark crimson, very sweet; Norman Lambert, salmon orange; Mme. Butterfly, pink; Mrs. H. Winnett, crimson; Mabel Morse, yellow; Mrs. S. McGredy, scarlet and copper orange; Mrs. H. Morse, rose pink; Mrs. H. Bowles, rose pink; Mrs. Wemyss Quin, yellow; Ophelia, flesh pink; Lady Pirrie, copper salmon; Lady Inchiquin, cerise; Mrs. A. R. Barraclough, brilliant pink; Shot Silk, cherry cerise; W. A. Bilney, primrose and apricot.

Good Roses for Amateurs. White or cream white : Clarice Goodacre, Frau Karl Druschki, Mme. Jules Bouche, White Ensign, Westfield Star.

Yellow : Mabel Morse, Golden Emblem, Mrs. Beckwith, Mrs. Wemyss Quin, Julien Potin, Golden Gleam, Billy Boy (single).

Orange and apricot shades : Emma Wright, Duchess of Atholl, Lady Roundway, Independence Day, Mrs. Dunlop Best, Lamia, Angèle Pernet, Mme. Edward Herriot, Lady Forteviot.

Cerise : Lady Inchiquin, W. E. Nickerson, Lady Mary Elizabeth, Gwyneth Jones.

Pink and rose : Caroline Testout, Mrs. H. Morse, Mme. Butterfly, Dame Edith Helen, Mrs. Bryce Allan (very sweet), Ethel Somerset, Lady Pirrie, Dainty Bess (single), Isobel, Mrs. H. Bowles, Mrs. A. R. Barraclough, Else Poulsen, Betty Uprichard.

Red and scarlet : General McArthur, Hortulanus Budde, Chas. P. Kilham, Scarlet Glory, Kirsten Poulsen (single), K. of K. (semi-double), Red Letter Day.

Crimson : Miss C. E. van Rossem, Lieutenant Chauré, Waltham Cross (semi-double), Ivanhoe, Sir David Davies.

Dark crimson : Etoile de Hollande, Hadley, Hoosier Beauty, Lady Helen Maglona, Portadown, W. C. Gaunt, Lady Castlereagh (almost black), Saltaire, Covent Garden, Bedford Crimson, Mrs. H. Winnett, George Dickson.

Sweet-scented Roses. Among pink and rose-coloured varieties, two of the sweetest Roses are Mrs. Bryce Allan and Mrs. George Norwood. Both are fine full Roses of good form, but the latter is rather a "stumpy" grower. Others of similar colouring, possessing fragrance in a slightly lesser degree, are Mme. Segond Weber, Ethel Somerset, Columbia, Lady Alice Stanley, Gustav Grunerwald, Mrs. Elisha Hicks, Una Wallace, Premier, Pharisaer, Ophelia, and Mme. Butterfly. Conrad Meyer and Nova Zembla are two very

vigorous Roses ; two other climbing Roses with fragrant blooms are Mme. Alfred Carrière, white, and Zéphirine Drouhin, rose. The scarlet crimson Grüss an Teplitz, flowering in clusters, is sweet-scented, and Effective, a crimson semiclimbing Rose, has shapely buds equally sweet.

Even white Roses are not devoid of perfume, as exemplified in Marcia Stanhope, Edel, and Mrs. Chas. Lamplough. Practically none of the yellow Roses can be said to possess the "old-fashioned" Rose perfume, but many have a fruit-like fragrance that makes them worthy of inclusion amongst sweet-scented Roses. A few are Mabel Morse, Duchess of Wellington, Florence Izzard, Golden Emblem, Mrs. Wemyss Quin, and Sovereign.

Fragrant Crimson Roses. The old Rose fragrance is associated in the minds of most people with the crimson Rose. This arises, no doubt, from the fact that it was the predominant colour of the old Hybrid Perpetual Roses that excelled in sweetness of perfume. What sweet odours are called to mind by the Roses Alfred Colomb, Charles Lefebvre, Commandant Felix Faure, Fisher Holmes, General Jacqueminot, Louis van Houtte, Prince Camille de Rohan, Victor Hugo, and others. Few of these are now grown, and the all-conquering Hybrid Teas have taken their place. No list of fragrant Roses of to-day would be complete without that easily-grown favourite, Hugh Dickson, which belongs to the Hybrid Perpetual class.

Foremost amongst the fragrant crimson H.T.'s comes the well-known General McArthur, a Rose that all should grow. Another is Hadley. In some seasons, under

favourable climatic conditions, this Rose is very fine, but unfortunately the petals often tend to "blue" early, and it is somewhat addicted to mildew, but it never lacks sweetness.

A more reliable Rose, not quite so richly perfumed, is Hoosier Beauty, a flower with a long stem that is fine for cutting. Nor must we forget Richmond, though this Rose does far better under glass than when grown in the open. The claims of Lieutenant Chauré cannot be ignored, and this is a good grower in almost any garden. So also is Avoca. Prince of Wales has already established a reputation for fragrance.

Other crimson Roses possessing the old Rose scent in a lesser degree are Chateau de Clos Vougeot, Admiral Ward, Crimson Emblem, Etoile de Hollande, Miss C. E. van Rossem, George Dickson, Walter C. Clark, Chas. K. Douglas, The General, National Emblem, Crusader, Gloire de Hollande, King George V., Lord Charlemont, K. of K., and Vesuvius.

Roses with the Old Rose Scent : Audrey, Avoca, Chateau de Clos Vougeot, Crimson Emblem, Earl Beatty, Etoile de Hollande, Fragrance, General McArthur, Glory of Steinfurth, Grüss an Teplitz, Hadley, Hoosier Beauty, Hortulanus Budde, Hugh Dickson, Lieutenant Chauré, Mme. Abel Chatenay, Mme. Butterfly, Marcia Stanhope, Mrs. Bryce Allan, Mrs. Dunlop Best, Mrs. Elisha Hicks, Mrs. George Norwood, Mrs. H. Winnett, Ophelia, Prince of Wales, Richmond, Walter C. Clark, Westfield Star, W. F. Dreer. The single Rose Vesuvius, the semi-double K. of K., and the semi-climbers Florence Haswell Veitch, Souvenir de

Claudius Denoyel, and Sarah Bernhardt also have scented flowers.

Twenty-four Standard Roses :

Admiration, cream, shaded vermillion ; Aspirant Marcel Rouyer, apricot yellow ; Betty Uprichard, salmon and carmine ; Caroline Testout, light rose ; Countess Clanwilliam, peach pink, edged red ; Mme. E. Herriot, coral red ; Emma Wright, salmon orange ; Etoile de Hollande, dark crimson ; Frau Karl Druschki, white ; Golden Emblem, yellow ; Hugh Dickson, crimson ; Ivanhoe, scarlet ; Lady Forteviot, golden yellow to reddish apricot ; Margaret Dixon Hartland, salmon, shaded pink ; Mme. Butterfly, pink ; Mme. Mélanie Soupert, apricot ; Mrs. H. Bowles, rose ; Mrs. H. Morse, rose ; Mrs. Wemyss Quin, yellow ; Ophelia, blush ; Shot Silk, cerise ; W. A. Bilney, primrose, flushed apricot ; W. F. Dreer, yellow and rose ; White Ensign.

Some of the dwarf *Polyantha* Roses make good standards. Half a dozen good ones are Else Poulsen, rose pink ; Jessie, cherry crimson ; Kirsten Poulsen, orange scarlet ; Nurse Cavell, crimson ; Orleans, rose crimson ; and Mrs. W. H. Cutbush, pink.

Ideal Roses for Cutting : Una Wallace, Ethel Somerset, Ophelia, Mme. Butterfly, Angèle Pernet, Chas. P. Kilham, Shot Silk, Mrs. H. Winnett, General McArthur, Hoosier Beauty, Florence Izzard, R. E. West, Ville de Paris, Betty Uprichard, Mrs. Chas. Lamplough, Emma Wright, Countess Clanwilliam, Rev. Page-Roberts, F. J. Harrison, Mrs. Dunlop Best, Mrs. H. Morse, Miss C. E. van Rossem, Aspirant Marcel Rouyer, Clarice Goodacre, Earl Beatty, Norman Lambert, Golden Emblem, Ivy May, Lady Sylvia, and Hadley.

Double-Purpose Roses—Garden and Exhibition. The following are free-blooming, good "doers," and, if well cultivated and disbudded, may be grown to produce blooms of exhibition size ; they are also excellent for garden decoration :

Admiration, cream pink ; Anne, cherry red ; Caroline Testout, light rose ; Dame Edith Helen, pink ; Earl Haig, reddish crimson ; Frau Karl Druschki, white ; Golden Emblem, yellow ; Gorgeous, orange yellow, flushed reddish copper ; Hugh Dickson, crimson ; J. N. Hart, rose pink ; Lady Alice Stanley, silvery pink ; Lady Florence Stronge, reddish ; Lady Inchiquin, orange cerise ; Lieutenant Chauré, crimson ; Mabel Morse, golden yellow ; Mabel Turner, salmon pink ; Mme. Mélanie Soupert, yellow and apricot ; Mrs. A. R. Barraclough, carmine pink ; Mrs. Chas. Lamplough, lemon cream ; Mrs. H. Bowles, rose ; Mrs. H. Winnett, crimson ; Mrs. J. Laing, pink ; Pharisaer, rose white ; Rev. F. Page-Roberts, yellow blotched buff ; Shot Silk, cerise, shaded orange salmon ; Sir David Davis, crimson ; Una Wallace, cherry rose ; Mrs. Bryce Allan, carmine rose.

Mildew-proof Roses. It is difficult to say, with any degree of certainty, that any Rose under all conditions is absolutely free from mildew. There are some, however, of which it may be said that in most seasons they show little or no trace of the disease. Most of them are in shades of yellow or orange.

Red : Chateau de Clos Vougeot, Admiral Ward, National Emblem, Crimson Emblem, Colonel Oswald Fitzgerald, Hoosier Beauty, K. of K., Red Letter Day, C. V.

Haworth, Covent Garden, and W. C. Gaunt.

Pink: Columbia, Lady Pirrie, Los Angeles, Ophelia, Mme. Butterfly, Dorothy Page-Roberts, and Glory of Steinfurth.

Yellow: Christine, Tim Page, Mabel Morse, Mrs. S. K. Rindge, Mrs. Wemyss Quin, Sovereign, Hortulanus Fiet, Golden Emblem, Rev. Page-Roberts, Souvenir de Claudius Pernet, Cissie Easlea, Duchess of Wellington, and Souvenir de Gustave Prat.

Orange: A. R. Goodwin, Benedicite Seguin, Emma Wright, Lamia, Lady Roundway, and Mrs. Redford.

White: Edel, Clarice Goodacre.

Other colours: Irish Fireflame, Independence Day, Maud Cumming, W. F. Dreer, and Mrs. Dunlop Best.

Best Wet Weather Roses. Probably the best wet weather Rose we have is Colonel Oswald Fitzgerald. Covent Garden and W. C. Gaunt are other good dark crimson Roses that withstand wet admirably. General McArthur, Liberty, C. V. Haworth, Richmond, and Mrs. Edward Powell are fairly satisfactory; so also is the large and beautiful exhibition variety Earl Haig. These are the best of the deep crimsons.

Of yellows, Mabel Morse is the best, with Christine a good second. Madame Ravary is good, but most of the other yellows look miserable in wet weather.

The pink Roses generally do not stand well, but Lady Pirrie, Mrs. Henry Morse, Ophelia, Pharisaer, Noblesse, Gustav Grunerwald, and Mrs. Bertram Walker suffer least. Of other colours, Betty Uprichard, Mrs. C. V. Haworth, Frances Gaunt, Edith Part, Lady Elphin-

stone, Mrs. Redford, Betty, Harry Kirk, and Lady Hillingdon are good. White Roses are not happy in wet weather.

Beautiful Rambler Roses. These Roses are best for covering pergolas and arches. They are not usually a success if trained against a hot wall. They possess glossy foliage, but generally bear only one crop of bloom.

Some of the best varieties are: Alberic Barbier, cream white; Albertine, copper salmon; Alida Lovatt, flesh pink, fragrant; American Pillar, single, rose pink; Dorcas, coral pink, blooms over a long period; Dorothy Perkins, pink; Dr. Van Fleet, blush pink; Emily Gray, yellow, best of its colour; Excelsa, crimson; François Juranville, rose, shaded salmon; Lady Godiva, flesh; Leontine Gervais, yellowish salmon; Mary Lovett, white; Miss Helyett, carmine pink; Mrs. F. W. Flight, pink; Sander's White; Purity, white; Thelma, coral pink.

The following are arranged in the approximate order of flowering: Carmine Pillar, rosy carmine, single; Alberic Barbier, creamy white, lovely foliage; Emily Gray, the finest yellow, grand foliage; Chaplin's Pink; American Pillar, single, rose pink, white eye; René André, saffron yellow and orange red; Dr. van Fleet, blush pink, large shapely buds and fine foliage; Purity, white, semi-double; Excelsa, scarlet crimson, fine; Dorothy Perkins, pink; Lady Godiva, flesh pink; and Thelma, coral pink.

The Best Climbing Roses: Climbing Caroline Testout, rose pink; Climbing Mme. Abel Chate-nay, salmon rose; Climbing Ophelia, blush; Climbing Mme. Butterfly, a richer coloured

Ophelia ; Climbing Mme. E. Herriot, coral red ; Climbing Paul Lédé, apricot, shaded rose ; Climbing Richmond, crimson ; Climbing Sunburst, yellow ; Lady Waterlow, salmon rose and carmine ; Gloire de Dijon, buff ; Lemon Pillar, lemon ; Mme. Gregoire Staechelin, pearl pink, a fine Rose ; Mme. Alfred Carrière, white, flushed pink ; Souvenir de Claudius Denoyel, crimson ; Zéphirine Drouhin, rose pink, the thornless Rose.

Among cluster Roses there are Allen Chandler, scarlet, semi-double ; Grüss an Teplitz, scarlet crimson, very sweet ; Mermaid, single, yellow, lovely foliage ; Paul's Scarlet Climber, scarlet ; Phyllis Bide, carmine pink ; Rêve d'Or, copper yellow ; Chaplin's Pink Climber ; William Allen Richardson, orange yellow.

Climbing Roses for Walls. North wall : Alberic Barbier, cream ; Bennett's Seedling, white ; Conrad F. Meyer, silvery rose, large blooms ; Félicité et Perpétue, cream white ; Gloire de Dijon, buff ; Mary Wallace, rose pink ; Mermaid, single, yellow.

East wall : Ards Rover, dark crimson ; Climbing Caroline Testout, pink ; Florence Haswell Veitch, dark crimson ; Gloire de Dijon, buff ; Lady Waterlow, salmon blush, edged carmine ; Mme. Alfred Carrière, white ; Paul's Scarlet Climber ; William Allen Richardson, orange yellow.

South wall : Climbing Lady Hillingdon, golden yellow ; Maréchal Niel, yellow ; Climbing Mélanie Soupert, apricot ; Climbing Ophelia, salmon pink ; Climbing Paul Lédé, rose, shaded yellow ; Climbing Mme. Abel Chatenay, salmon rose ; Climbing Sunburst, cadmium yellow.

West wall : Yellow Banksia ; Climbing Mme. Butterfly, salmon pink ; Mermaid, cream ; Miss Hel-yett, carmine pink, shaded salmon ; Pax, white ; Zéphirine Drouhin, soft pink, the thornless Rose.

Climbing Roses that Bloom Early and Late. The number of continuous-flowering climbing Roses has been largely increased during the last few years by the introduction of climbing "sports" of many popular dwarf varieties. These are the best of them :

Climbing Caroline Testout, pale rose ; Climbing Mme. Abel Chatenay, carmine rose, shaded salmon ; Climbing Hoosier Beauty, crimson ; Climbing Lady Hillingdon, orange yellow ; Climbing Mme. Butterfly, pink and salmon ; Climbing Mme. E. Herriot, coral red ; Climbing Mme. Mélanie Soupert, salmon yellow, suffused carmine ; Climbing Ophelia, salmon flesh, shaded rose and yellow ; Climbing Paul Lédé, cinnamon pink ; Climbing Sunburst, yellow. All these should be pruned very sparingly ; they should not be pruned at all the first spring after planting.

Other climbers and semi-climbers that bloom early and late are : Allen Chandler, scarlet, semi-double ; Ards Rover, crimson, shaded maroon ; Florence H. Veitch, crimson ; Gloire de Dijon, buff and salmon ; Grüss an Teplitz, scarlet crimson, very sweet ; Lady Waterlow, salmon rose and carmine ; Mme. Alfred Carrière, white, sweetly scented ; Mermaid, sulphur yellow, large single ; Souvenir de Claudius Denoyel, crimson, tinted vermilion, one of the best and sweetly scented ; Zéphirine Drouhin, silvery pink, thornless.

A pretty cluster Rose, always in bloom, which can be trained up

pillars to a height of 8 feet in two or three years, is *Phyllis Bide*, carmine pink, shaded with yellow.

Good Pillar Roses. Nothing adds to the beauty of a garden more than a few pillar Roses. Unfortunately many that are grown as pillars are only summer flowering. They are objects of great beauty whilst in flower, but their period of blooming is comparatively short. Raisers are now striving to remedy this defect, and the results of their labours are seen in two fine varieties, viz., *Mermaid* and *Phyllis Bide*, the former blooming until stopped by frost, and the latter over a long period.

It is a mistake to select varieties that are too rampant for planting as pillars, as their strong growths are difficult to train and give the plants an untidy appearance even when in bloom. Suitable varieties are *Aviateur Bleriot*, *Hiawatha*, *Paul's Scarlet Climber*, *Sander's White*, *Shower of Gold*, *Dorcas*, and *Paul's Lemon Pillar*.

Among others of less vigorous growth there are some fine perpetual-flowering Roses, which, whilst they do not make such a brilliant show as the others when in bloom, outweigh this disadvantage by blooming throughout a longer period. The individual blooms of some are also shapely, and useful in the bud for buttonholes or vases. Some of the best of these are *Ards Rover*, *Effective*, *Avoca*, *Hugh Dickson*, *Lady Waterlow*, *Florence Haswell Veitch*, *Grüss an Teplitz*, *Sarah Bernhardt*, *Zéphirine Drouhin*, *Bardou Job*, *Mme. Alfred Carrière*, and *J. B. Clark*.

We frequently see many of the climbing "sports" recommended, but as the growths have naturally to be trained vertically, they tend

to become very "leggy." This bareness at the base can be obviated if the dwarf Rose of the same name is planted on the other side of the pole and trained to cover the bare stems of the climbing "sport." Good varieties of the climbing "sports" are *Climbing Mme. Abel Chatenay*, *Climbing Ophelia*, *Climbing Lady Hillingdon*, *Climbing W. J. Grant*, *Climbing Paul Lédé*, *Climbing General McArthur*, *Climbing Irish Fireflame*, and *Climbing Mélanie Soupert*.

If extra tall pillars are required, *American Pillar*, *Blush Rambler*, and *Lady Gwendolin Colvin* might be planted, but these only bloom in summer.

Roses for Buttonholes. The ideal buttonhole Rose should not be too large, and blooms of imbricated or cupped form should not be chosen. What is required is one of medium size and fullness, with a high pointed centre and reflexed petals, attractive colouring, and fragrance.

The following are recommended for buttonholes: *Adele Crofton*, yellow overlaid with scarlet orange; *Angèle Pernet*, orange yellow, shaded with apricot; *Betty Upchurch*, salmon, reverse carmine; *Canary*, yellow; *Chas. P. Kilham*, orange red; *Clarice Goodacre*, ivory white; *Edith Nellie Perkins*, salmon pink, reverse red; *Etoile de Hollande*, dark crimson; *Flamingo*, cerise red; *Golden Emblem*, yellow; *Gipsy Lass*, scarlet crimson; *Golden Gleam*, buttercup yellow; *Hadley*, crimson, shaded blush; *Ivanhoe*, scarlet crimson; *Independence Day*, yellow; *Ivy May*, rose pink, shaded gold; *J. C. Thornton*, scarlet crimson, lacks perfume; *Lady Forteviot*, golden yellow and apricot; *Lady Margaret Elizabeth*, carmine pink.

CHAPTER 11

Making and Planting a Rock Garden

THE delight of watching a rock garden or rockery gradually take shape and become filled with low masses of alpine flowers that spread and spread until they fill all the nooks and crannies with rivulets of bloom and, overflowing, flood the miniature valleys with enchanting colour as spring and early summer come round—this delight can be appreciated only by those who have actually carried out the work and themselves have built a rockery or have closely supervised its building in their own gardens.

The work of building is fascinating, it affords scope for imagination, it is not arduous unless the rock garden is an extensive one and large boulders are used in its construction, and it gives great pleasure when planted and filled with the mountain flowers.

Within a few square yards of ground it is possible to have a representative collection of alpine plants, for most of them take up little room, and owing to the broken, undulating surface of the rockery numerous little pockets, bays, nooks, and crevices are fashioned that provide room for many more than could be planted on level ground of equal area. It is possible to find room for those that like the sunshine and for those that prefer the shade; here and there

the rocks will rise boldly in masses and cast shade during part of the day, providing places in which those that need coolness and moisture are perfectly at home.

The general height of the rock garden will naturally be governed by the width of the ground. If the site is only 2 or 3 yards wide, it is not wise to build too high, otherwise the banks will be very steep and there will be little bulk of soil behind them; in such conditions the plants may suffer from drought during a hot, dry summer, and that is one of the things they cannot withstand. These alpine plants need perfect drainage in winter and an abundance of water in spring and early summer when, in their natural habitats, the snows are melting and the mountain rivulets become swollen to rushing torrents.

The ways in which a small rock garden can be constructed are illimitable. It may be simply a low mound of soil broken here and there by bold groups of outcropping rocks such as one may see on many a mountain slope in the highlands of this country. A winding path may intersect it, and where it rises an opportunity is given to make a flight of steps flanked on either side by a rough stone wall, "built dry," that is to say, without mortar, the space between the

stones being filled with soil in which many plants will flourish.

The builder with higher flights of imagination will not be content with less than a miniature mountain range with its peaks and pinnacles, its bold rocky headlands, its precipices, rock-strewn gorges, little valleys and gentle slopes that lead to the lowland levels. Every crevice between the rocks may be filled with Saxifrage, or Primula, Stonecrop or Pink or other mountain flower beauties, and the little valleys may be exquisite green carpets of mossy Saxifrage.

Some may like to make a pool among the rocks where, if it is open to the sunshine, miniature Water Lilies, flowering Rush or Water Hawthorn may be grown. And round about the pool, kept moist with water that overflows from time to time, there may be a little bog garden, suitable home for the exquisite Himalayan Primula rosea, the pale yellow Primrose from Sikkim, dwarf Marsh Marigold and many other flowers that love moist soil. In short, the rock garden offers illimitable possibilities to the amateur gardener with a little imagination, who has memories of a holiday among the mountains and in his own restricted domain endeavours to arrange the rocks as Nature might have done, and to plant the flowers that love to grow among them.

A Chat about Alpine Flowers.

There is some excuse for the amateur who, having seen a rock garden that was made and planted without regard to cost and full to overflowing with the loveliest flowers from the mountains of the world, comes to the conclusion that rock gardening is not for him. Yet,

after all, the gardener who has an ideal, however unattainable, is much more likely to create a garden that will provide a congenial home for many rock and alpine plants, one that will look like a rock garden, too, than another who is without an ideal of any kind.

Many a would-be rock gardener believes that the one thing which prevents him from possessing a really good rock garden is a short banking account; and, of course, if there is to be an initial outlay on a large quantity of rocks and alpine plants the cost will be very considerable. But money alone won't make a good rock garden, and many beautiful alpine can be successfully grown and flowered without a large initial expenditure, provided that the gardener is in possession of something which, so far as the rock garden is concerned, is of more importance than money—knowledge and experience. The former is gained by study, and the latter by practice.

Rock and alpine plants are marked by characteristics peculiarly their own, and a knowledge of the conditions which govern their lives in their natural homes is of immense importance for the right construction of a rock garden. No man can reproduce the grandeur of the Alps in his garden, or provide the weather of the mountains—the ice and snow, and the brilliant sunshine—but he can do something to provide underfoot, so to speak, conditions which will help his alpine to realise that they have not been bereft of everything that makes life possible to them.

Characteristics of Mountain Flowers. What, then, are the main characteristics of alpine plants, and

what are the soil conditions to which they are accustomed? It is, generally, and perhaps not unnaturally, assumed that the flower of an alpine is its most wonderful feature; the foliage is, as a rule, dwarf and insignificant, but the flowers are large, wonderfully



A beautiful rock garden flower, the Alpine Anemone.

coloured, and produced in such profusion as very often to hide completely the stunted tuft of leaves from which they spring. Yet, as a matter of fact, the real secret of an "alpine's" life is its root. That little tuft of Saxifrage, for example, has a marvellous root-system which penetrates deep down into the soil, and it is a well-established fact that many high alpine plants which only show a small rosette of leaves above the ground send down roots more than a yard long into the rock fissures below them. It is down there, well

below the surface, that they are able to find that never-failing supply of fresh moisture which is essential to their existence.

It becomes evident, therefore, that in the preparation of a rock garden in which alpine plants are to grow the provision of a deep bed of soil where the roots will never lack fresh supplies of water is the main point to bear in mind. Everything else that has a place in the building of a rock garden must be subsidiary to the provision of the right conditions for healthy and vigorous root action. The real object of a rock garden is to give alpine plants the best possible chance of growing away from their natural environment; the artistic arrangement of the garden and the beauty of the general effect are really only secondary. It stands to reason that this must be so, if you think it out.

Success not Dependent on Cost.

The gardener who, side by side with an intimate knowledge of the conditions governing the life of alpine and rock plants, can spend £100 on rock to build into his garden will naturally be able to produce a better effect than another who, without the means of obtaining natural rock of any kind, has to depend upon what he is able to get. But the actual joy of growing choice alpine plants will be the same for both. The placing of the rocks or stones has much to do with the supply of moisture to the roots of the plants, and unless they are set so as to allow the rain-water to pass easily into the soil, one of the principal reasons for their presence in the rockery is lost.

Let every maker of a rock garden have his ideal of what his rockery

ought to be ; let him know what sort of soil to use, how every rock and stone ought to be set—in short, let him understand what each alpine plant that he wants to grow has the right to look for and to find.

The actual result will, no doubt, fall far short of what was aimed at, but many choice and beautiful plants will be found to thrive and

of all weeds from the site, or, at all events, to do so as far as is practicable. Once a troublesome weed gets well established in a rock garden its roots find their way underneath the rocks or stones, and if of a creeping kind, as the worst ones are, it creeps among the plants and causes no end of trouble. Often the only way to eradicate such a

The Pasque Flower,
Anemone Pulsatilla, a
charming rock garden
plant which bears purple
blooms in spring.



flourish ; and imagination, which the ideal in his mind has set in motion, will play no little part in helping to transform the crude representation of natural rockwork into the spurs, crevices, moraines, and sunny pastures of the mountain ranges.

Making a Start. As a rock garden will last indefinitely without alteration except for the occasional replanting that may and will become necessary during the course of years, it is wise to build well and correctly. Perhaps the most important initial proceeding is to get rid

weed is to pull down, remake, and replant the portion that is affected. But there will be no danger of such an unfortunate happening if all the roots of perennial weeds are searched for and destroyed when the site of the rock garden is dug over, and if care is taken to uproot all that are seen subsequently when they are few in number.

One thing the rock garden plants must have and that is perfect drainage ; lacking this anything else one may do for them will be largely in vain. If this is provided the amateur will find that most

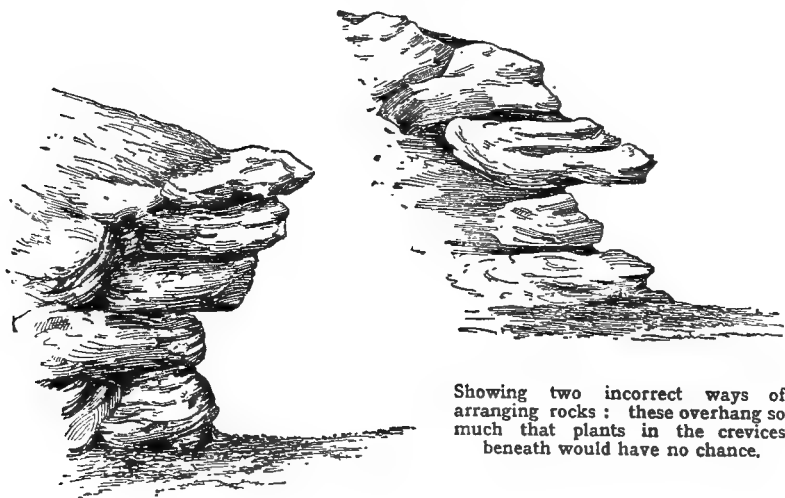
alpine plants are as easily grown as the familiar border kinds. If the rock garden is to be built on heavy, clayey ground some artificial drainage is required ; if the land is naturally gravelly or sandy artificial drainage is not necessary.

Presuming that drainage has to be put in because the ground is clayey, the soil should be dug out to a depth of about 12 inches all over the site and taken away ; the space is then filled with stones or broken bricks. Such a foundation will ensure that the bulk of the rock garden soil will be free from stagnant moisture during the winter months. It is at that season that conditions are difficult for alpine plants. In their native habitats they lie dormant underneath a mantle of snow ; here they are exposed to alternating periods of mild rainy weather and sharp frost which tries them severely. They do not mind the cold, but stagnant moisture round about them is harmful. Given free drainage,

however, the plants are likely to come through the winter safely.

In the management of certain choice kinds, especially those with thick woolly leaves, which are more liable to "damp off" than those with hard smooth leaves, it is necessary to protect them from heavy rain in winter. This is done by a piece of glass raised 3 or 4 inches above the ground by means of wires bent at the top so that they hold the glass securely ; this method, while keeping rain off the plants, still leaves them exposed to the air which is essential.

Many amateurs have the idea that in building a rock garden it is merely necessary to pile up the rocks one on top of another with as little soil as possible between them. That, however, is not the way to build. The roots of most alpine plants go deeply in search of the moisture which is essential to their well-being. There must be a substantial bank or mound of soil beneath the rocks, and if it is



Showing two incorrect ways of arranging rocks : these overhang so much that plants in the crevices beneath would have no chance.



This picture shows a natural outcrop of rock on a hillside, which the amateur would do well to imitate when building.

intended to set plants between the rocks there must be a layer of soil there also. Rocks are not necessary to the successful management of alpine plants; these can be grown just as well on a raised mound of suitable soil. But there they would lack the charm that attaches to them when they are able to spread naturally among the rocks and fill the cracks and crevices with their dainty flowers. The rocks add to the charm of the scene and give interest and verisimilitude to the display, but there must be a sufficient depth of soil underneath them which the roots of the plants can penetrate.

Wrong Ways of Rock Gardening.

As has been pointed out in a previous page, no rock garden is exactly like any other, and it is unnecessary to follow any particular design; that is, indeed, generally out of the question, because a plan for a rock garden has to be adapted to the site. The latter may be part of a hillside, an old quarry, a flat piece of garden, or a rough oak. It is obvious that as such

widely different conditions prevail rock gardens must vary greatly in the way in which they are planned and planted. That makes the work all the more fascinating, for there is nothing more satisfying than having a garden that is quite different from anyone else's. When people plan a Rose garden they usually choose from a few stereotyped designs, but when they come to build a rock garden they may design it just how they will.

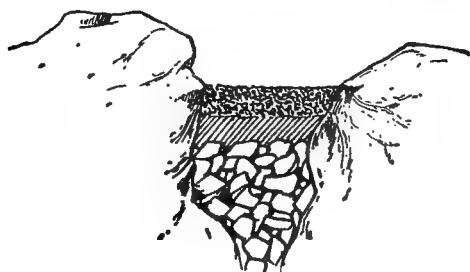
There are, however, certain principles that must be recognised and put into practice if the result is to be satisfactory so far as the needs of the plants are concerned and if the rock garden is to have as natural an appearance as possible.

As a rule, the fewer rocks the amateur uses the better pleased will he be when the work is finished if he be of a discerning mind and has obtained some knowledge of his subject. There are many rock gardens built by amateurs, who are keen growers of flowering plants, that are perfectly hideous; if they

appear to be satisfied with them that is because they know nothing about the subject. They choose the wrong kind of stones, they arrange them in every way that is wrong, and they make an indifferent choice of plants. The result of their labours is a jumble of stones and

soil, chiefly stones, in which no alpine plants would have a real chance of thriving.

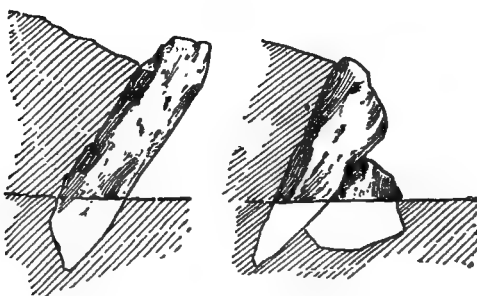
The worst possible stone for a rock garden is that white polished material commonly known as "marble"; next in order of unsuitability is granite, a very hard



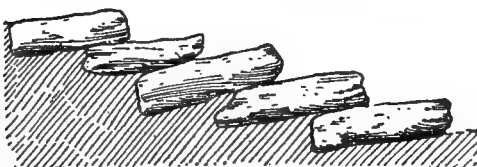
Section through a moraine showing perfect drainage and a mixture of soil and stone chips at the top.



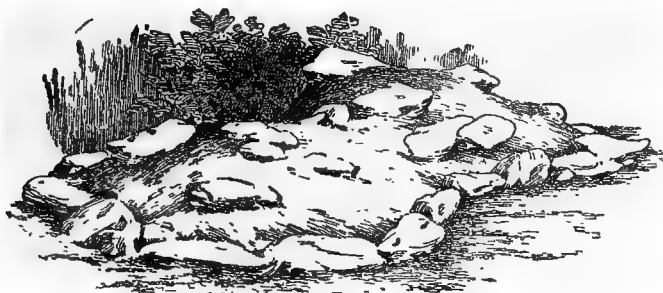
If a paved path runs through the rock garden the edges should be broken up in this way.



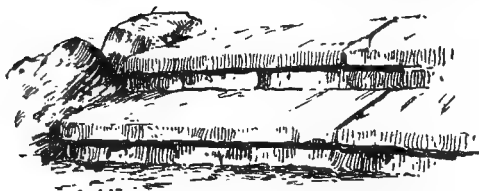
The stone on the left is not set firmly and in time will give way: it needs to be supported as is shown on the right.



Even a simple terrace rockery is interesting when planted with "alpines," but the effect may be commonplace if the pieces of stone are of uniform size.

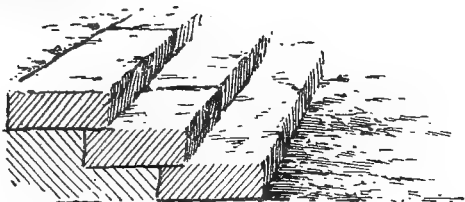


A simple rock bed or border, on which many charming alpine flowers can be grown.



Formal steps look altogether out of place in a rock garden and detract from its charm.

If steps are built in the rock garden they should be as informal as possible, with chinks here and there in which plants may be set.



stone that offers no roothold to the alpine, that is impervious to moisture and altogether unsuitable to the needs of plants. Those who make use of flints and whitewash them are really beyond the pale. Such people luckily do not attempt to cultivate true alpine plants; they plant such things as Creeping Jenny, double white Arabis, Snow in Summer or Cerastium, London Pride, and a few other rampant plants that would grow equally well on the level ground and would look far better there, they add a few ferns for variety, and there you are—a rockery!

Such a building is a travesty of the real thing, and bears less rela-

tion to a garden of alpine flowers than the Dog Rose bears to the double Roses that are budded on it—it is, in fact, not even distantly related.

What, then, is the amateur gardener to do who would build a rock garden on a limited area of ground? Is it hopeless for him to attempt to make a real one, a garden that shall be a fair attempt to reproduce in miniature some of the natural features of the alpine heights, one in which he may hope to manage successfully some of the fairest of the mountain flowers? Not only is it not difficult, but it is easy; it is necessary, however, to have the right outlook and not to believe

that any raised mass of stone and soil will do.

Hints on Building a Rock Garden. First and most important of all it is necessary, in building a rock garden, to choose a place that is fully exposed to the sunshine. It is true that some mountain plants need shade and moist soil, but if the building is correct such places will be provided as the work proceeds.



will fall far short of expectations. Most amateurs use too many rocks, and that fault will almost certainly give a bizarre and unnatural appearance to the garden unless the stones are arranged with the greatest care and with knowledge.

There is no need to go to extravagant expense in this matter when a rock garden is being built on a small area ; one load of stones will

If cement is used in rock garden building to make the stone firm, care must be taken not to block up the crevices in this way.

Most alpine flowers love and need the sunshine, and they will not flourish if planted in shady places.

The building must be firm, thus we must begin at the bottom and on the outer margin so that the foundation will be sound ; if the rocks or stones are not firmly embedded the plants can scarcely be expected to thrive. It has already been pointed out that drainage must be provided if the site of the rock garden is on heavy, clayey ground. When that is assured we may begin the work of laying the stones or rocks.

If, when finished, the rock garden has a natural appearance it may be counted a success ; if it looks exactly what it is, an artificial, raised mass of soil and rock, then it

go a long way if it is used to the best advantage. After all, a rock garden is a place for the cultivation of alpine or mountain flowers, and is not designed to show off large masses of rock. It is perfectly true that some kinds of stone, especially if weathered through long exposure, are very beautiful and add considerably to the charm of the building. It is a better policy to buy a limited quantity of such stone and to use it sparingly than to buy several loads of less attractive material and use it lavishly.

Before the actual building begins the owner must have in his mind a general idea of the ultimate form of his rock garden, whether it is to be merely a natural slope broken with masses of outcropping rock,

whether it shall be built high and its surface scarred with deep hollows, or if a paved path shall meander through it, or if there is to be a little pool or pond. These things must be decided in advance, otherwise the rock garden runs the risk of being featureless and ordinary.

Flowers of the Alpine Pink,
Dianthus alpinus, a charming
little rock garden plant which
likes gritty soil.

largest stones are grouped in bold masses instead of being frittered away, as it were, all over the available ground.

Laying the Rocks. It is a great advantage to have a few large rocks; if they are all of the same size and shape it will be extremely difficult to build a rock garden of



In building a rock garden it is a good plan to use the stones as you would use plants in filling a flower border—group them in masses. If they are scattered throughout the length and breadth of the site the finished building will lack distinction; it will be of monotonous evenness, there will be nothing to catch the eye and it must look very commonplace. If, on the other hand, some of the rocks are massed boldly here and there, those masses will stand out conspicuously; they will not only be seen to the fullest advantage, but by contrast the others will gain in value. Even a cartload of rock or stone will be sufficient to build a rock garden of outstanding interest if some of the

distinction. The only way then is to build up a few promontories, using several of the rocks together, and then it is not an easy matter to build firmly. A few large stones of irregular shape are far better than a large number of others of the same shape and size.

If the rocks are simply laid on top of a mound of soil they will not show to advantage and the plants will not benefit from their presence. A sound rule is that almost every rock or stone should be buried to about half its depth. It will then remain firm, it will have a natural appearance, and will benefit the plants by keeping the soil about the roots cool and moist, which should be one of its chief functions.



The exquisite spring Gentian (*Gentiana verna*).

Another detail of importance is to see that each large piece of stone is placed on its broadest base. If it is a high, narrow stone don't set it up on end; lay it on its side and embed it. Here and there, of course, for the sake of ensuring a varied outline, a rock may be set up on end to form a pinnacle if such is necessary to complete the scheme in view, but generally that sort of thing is better avoided. Above all, aim at building a natural rock garden, so that when it is complete it will look as though it had almost "grown" there. That end will be achieved if care is taken to arrange the rocks as the owner might expect to have seen them in nature.

In building it is necessary to fill in behind the rocks thoroughly with soil; the roots of many alpine plants descend deeply in search of moisture, and it is essential that there is soil all the way from the front of the rock crevices to the mass of soil at the back.

If the rocks are built steeply on a narrow base it is obvious that there

can be little soil beneath and among them, and alpenes planted there are almost certain to perish from drought. A fair mass of soil beneath and behind the rocks is essential. Before he starts to place the rocks the amateur will find it wise to arrange the soil roughly of the shape the rock garden is to be. As the work proceeds it will be altered in detail, but the general scheme will remain.

Making Pockets in the Rock Garden. As he sets the rocks he will find it an easy matter to make little bays here, little "pockets" there, to leave spaces between the rocks elsewhere—all these are necessary for the well-being of the plants. The rock garden is built to enable alpine flowers to be grown there, and suitable places, therefore, must be made for them. As some kinds need shade from the midday sun, "pockets" must also be arranged for them on the shady side of some of the largest rocks. Here and there will be rock ledges. Some of the alpenes, if planted

immediately behind a rocky ledge, will spread and their trails of leaf and flowers will hang over the edge with delightful effect.

In setting up rocks one on top of another to form a "headland," care should be taken to place soil between them so that plants set in the chinks or crevices will not perish for lack of moisture, but will find soil connecting the mouth of the crevice with the bulk behind.

Rock garden flowers rarely look better than in a narrow space between the rocks, where they form perfect miniature rivulets of blossom. Flattish stones set one above

another in the form of stepping stones on a gently sloping bank of soil also look very well when plants put in the soil between the "steps" are in bloom; they furnish a cascade of delightful colour.

As his work progresses the builder will find that he can introduce many little special features of the kind described; he will certainly do this if he knows the plants he has to use, determines where they would look best, and provides for them accordingly.

The Choice of Rock or Stone.
One of the first matters to be decided is what kind of rock or

There are many attractive rock garden plants among the hardy Primulas. Some of them will grow among the rocks; others like leafy soil and a cool, rather damp place. The illustration is of *Primula Littoniana*.

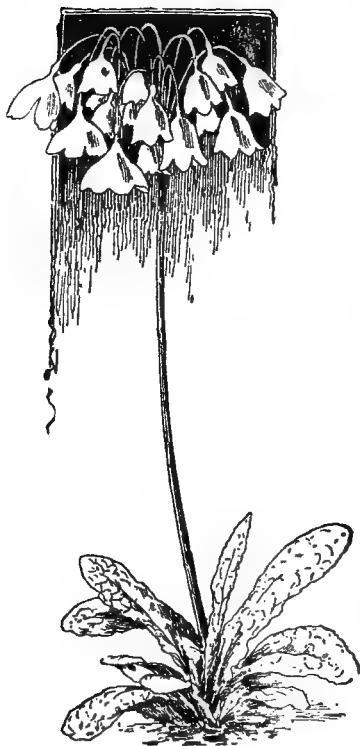


stone is to be used in building the rock garden. Before coming to a decision it is wise to make inquiries in one's own district to ascertain if a supply of suitable local stone is available. If such can be obtained a considerable saving will be made, for stone transported from a distance costs a good deal in carriage alone.

It is not necessary to spend a great deal of money on stone; this detail of expenditure can be kept down to the minimum if necessary.

It ought, however, to be pointed out that it is far better to buy one load of really first-rate stone than several loads of inferior material merely because the latter is more easily obtained or because it costs less per load. It is not the quantity of stone used in the rock garden that matters, but the way in which it is arranged and the effect it produces.

The most beautiful of all stone for the rock garden is the weathered limestone that can be obtained from



The pale yellow Sikkim Cowslip
(*Primula Sikkimensis*).



One of the most beautiful Saxifrages,
S. lingulata.

The Auricula, *Primula Auricula*, which bears yellow, fragrant flowers, is a delightful plant for a partially shaded place among the rocks.



Cumberland, Westmorland, and other districts. For countless years it has been exposed to the weather ; the wind and the rain, the frost and the snow of centuries have helped to make it what it is, a perfect example of natural stone. They have beaten it into the most fascinating shapes, they have hollowed out little crevices sufficiently deep to make a home for some of the rock garden plants, and the colour, a warm grey, sets off flowers of

almost any tint to the best advantage. Obtain such stone if you can and are able to afford it ; spend the available money on one ton of this rather than on three or four tons of anything else.

Sandstone is Popular. Sandstone is the next best material for rock garden building. It is softer than limestone and more liable to crumble from the disintegrating effects of alternating periods of frost and rain, but if it is weathered it

One of the earliest of the Saxifrages, the charming white *Saxifraga burseriana*.



will last for a long time. Millstone grit, a form of sandstone, is also to be recommended.

Large Pieces of Stone are Best. The amateur should, if possible, obtain a limited number of large pieces of stone rather than a large number of small ones ; he will find

Creeping Jenny that, alas! too often passes for a rockery.

Home-Made Rocks. He must obtain the largest pieces of stone of any kind that he can ; these are often to be got from the yards of the local council, or odd pieces may be picked up at a local nursery.



A Yarrow for the rock garden (*Achillea Clavennae*).

that they can be used to much better advantage in building.

We have now to consider the case of the amateur who wishes to make a real rock garden yet is unable to afford any considerable expenditure on stone. He can make quite a presentable rock garden at slight cost, and if he follows the instructions given elsewhere in this book he will be able to succeed with a large number of real alpine plants ; his creation will in no way resemble that hideous conglomeration of stones and ferns and

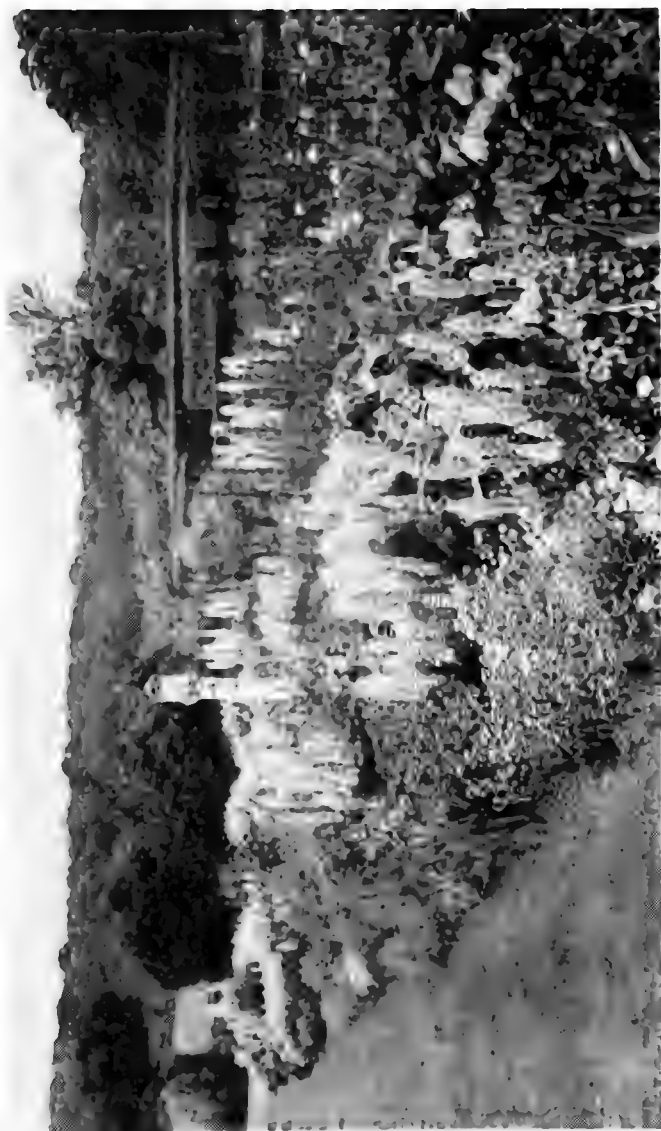
The more irregular they are the better. Even large pieces of clinker can be pressed into service by the enthusiast who is determined to have a rock garden, but finds difficulty in procuring the right kind of stone. By the time he has finished with it, according to the instructions to be given in this chapter, the clinker will have been transformed into something that resembles a piece of sandstone. Let the beginner, then, collect all the large stones, large pieces of clinker, concrete, and masses of brick that



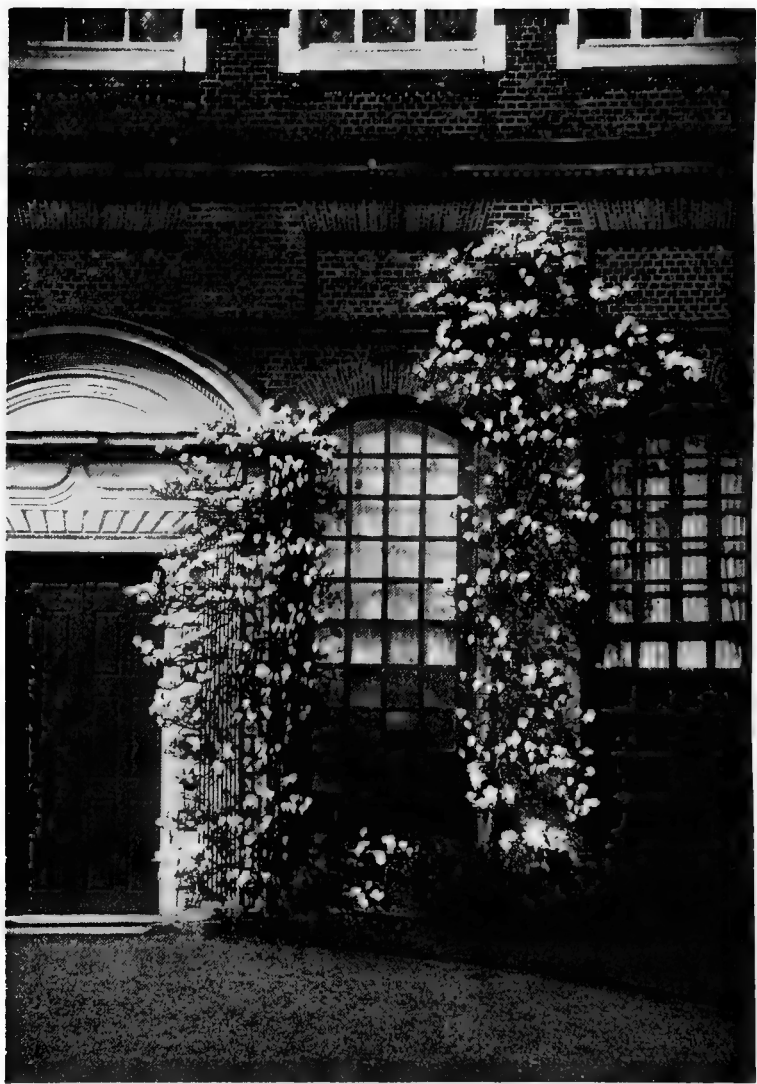
A border of *Michauxia crassipes* in full beauty in early autumn. Some kinds grow tall and bear large flowers, others are of graceful spreading growth with a profusion of small flowers. The colours are rose, crimson, lavender, and purple.



A charming garden corner, the beds are planted with the white Tobacco Flower, which fills the air with sweet scent in the evenings of summer days.



The hellebore bed at which is planted chiefly with hardy herbaceous perennial plants, is attractive from early summer until autumn. The plant back best when massed in large groups, early and late flowering kinds being placed near each other.

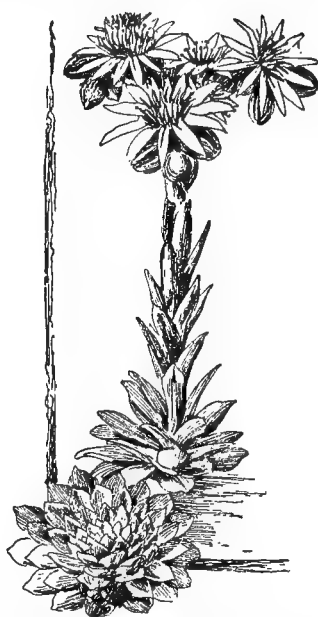


The Yulan or Lily Tree, *Magnolia conspicua*, an admirable spring-flowering shrub for a wall ; its large, white, cup-shaped, fragrant blooms open in April.

he can, and he will be well on the way towards the making of a rock garden that will give him immense pleasure.

The stone and other materials used as stone must be set according to the instructions given. When the rock garden is built its appearance will be anything but satisfying, but that is not the end. When the placing of the rocks is complete, let the beginner prepare a mixture of cement and sand, using half and half of these materials and mixing them with sufficient water to form a moderately thick liquid. Having moistened the rocks, he takes this cement liquid and covers all the exposed parts with it, and before the coating is dry he must scatter sand on it freely.

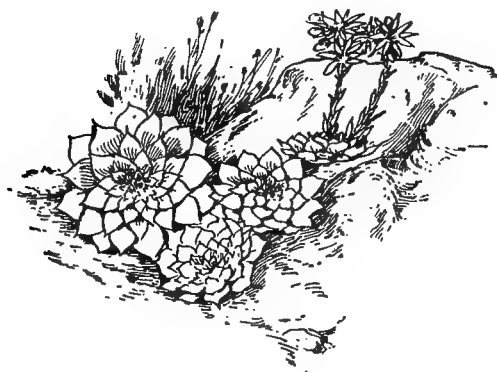
When all the rocks have been treated in this way and the sand and cement coatings are dry, they will resemble sandstone, and no one who was not in the secret would believe that they had been built up of odds and ends of concrete, stone, masses of brick, and so on. With such "rocks" the amateur can build a very fair copy of a mountain chain, complete with heights and headlands, peaks and precipices,



The common Houseleek, *Sempervivum tectorum*, in bloom.

valleys and stony banks, and among them all he may plant, with every hope of a successful issue, a representative collection of alpine or mountain plants.

When and How to Plant. Rock garden plants are cultivated in



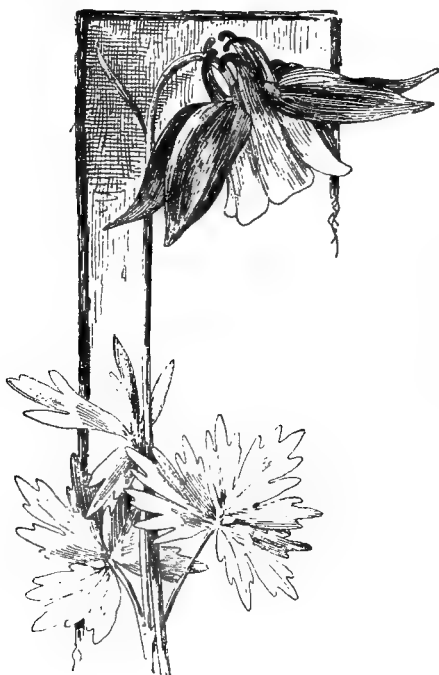
The Houseleek or *Sempervivum* will flourish in sun-baked positions in the rock garden and in very little soil. The plants soon spread into picturesque groups.

small flower-pots by nurserymen ; it is possible, therefore, to plant them at any time of the year, but September and March or April are the best months for this work. September is the most suitable time of all, for plants put in then have a chance of becoming established before winter sets in, and may be expected to provide a fair show of bloom the following spring. Not only that, but they will grow more freely in early summer than those planted in March-April, and as a consequence they will still yield a finer display the following year than others planted in spring.

Sometimes the small pots are so full of roots that these are matted together ; they must be disentangled to some extent, and that is

not easily done without damage. Perhaps the best plan is to soak them in water for a quarter of an hour ; it will then be found an easy matter to remove all the soil, thus leaving the roots free to be dealt with to the best advantage.

It is a mistake to put rock plants in their permanent positions when the soil in the pots is dry ; this ought to be well moistened thoroughly the day before planting is to take place. It is also wise to water the plants after they are put in ; that settles the soil round about the roots. Rock garden plants are set at such a depth that the uppermost roots are covered with half an inch or so of soil ; it is unwise to plant them so deeply that the centre or heart of the plant is in danger of



Several of the Columbines are suitable for planting in the rock garden in loamy soil. They are easily raised from seeds sown in sandy soil in a frame in spring : the seedlings will bloom the following year.



The Winter Aconite, *Eranthis hyemalis*, one of the earliest flowers.



The Spring Meadow Saffron (*Bulbocodium vernum*), a bulb flower for the rock garden.

being buried. The soil must be made firm round about the roots.

Planting in Crevices. When the amateur comes to the task of planting in a horizontal crevice between the rocks he will find it difficult to insert the plants. Alpines intended for such places ought really to be put in when the rock garden is

being built; the roots can then be spread out on the soil between the rocks, and it is certain that they will run no risk of perishing through drought, as may happen if they are planted near the mouth of the crevice. If they have to be put in after the rock garden is built, care should be taken to cover the

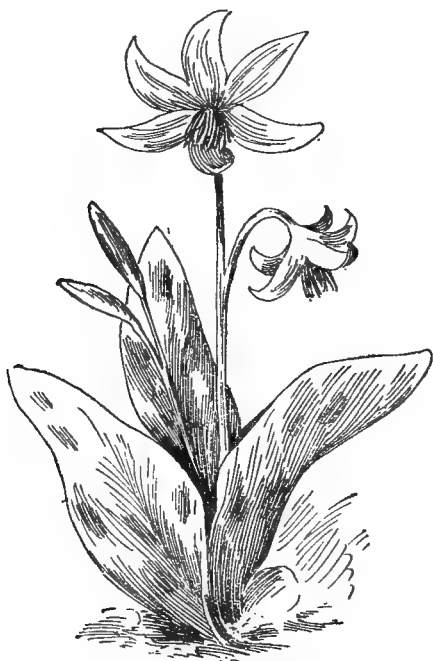


Shortia galacifolia, an attractive rock garden plant with pale pink flowers. Its leaves colour well in autumn.

roots with soil and to place small stones firmly against the "collar" of each plant to keep them in position.

Before putting in his plants the reader should ascertain whether they need any special kind of soil or position by referring to the

For instance, a bold mass of rocks with silvery Saxifrages planted among them will be far more attractive than if a varied collection of plants is arranged there. So, too, with the Pinks and Primulas, the Aubrietia and Alyssum, and others; group most of them near



The Dog's Tooth Violet or Erythronium, which has ornamental leaves and bears flowers of various colours in spring.

details to be found in catalogues. If they need peat, stony loam, or gritty soil, for instance, a little of the bulk of the rock garden mixture should be scooped out with a trowel and the required compost put in.

The appearance of the rockery is improved if the different kinds of plants are grouped together as far as is possible; if they are scattered from one end of the rockery to the other they will not provide such a striking display when at their best.

each other and use the remainder in various parts of the rockery. A stone ledge or rocky bank on which a single Aubrietia plant spreads its cascade of blossom will be attractive, but how much more fascinating would it be if half a dozen similar plants were grouped there.

The Kind of Soil to Use. It is commonly supposed by those who have not tried to cultivate alpine plants that they cannot be grown successfully unless elaborate soil

mixtures are prepared for them. It is true that certain rather difficult kinds need special soil mixtures, but most of those to be recommended to the amateur who has only limited opportunities for gardening will thrive in a compost that can be prepared with little trouble.

not only to buy but to transport. Therefore, those who are unable to obtain it must make use of the soil in their gardens; it will do very well if leaf-mould and sand are added freely.

Those whose gardens are on light land will have no difficulty in providing suitable soil for most alpine

A rock garden plant of low growth which bears purple flowers in spring, *Schizocodon*.



Ordinary garden soil may be used to form the bulk of the mound or bank of soil on which the rockery is built; at all events, it will do for the foundation. On top of it leaf-mould and sand ought to be mixed in freely, for it is there that the plants will be put in. The "pockets" or bays which are made for the plants as the rock garden is built should be filled with such a compost as is commonly used for plants grown in flower-pots under glass; it consists of equal parts of loam and leaf-mould with a free scattering of sand.

"Loam" is turf which has been stacked for six months or so and then chopped or pulled into pieces of varying size according to the kind of plant for which the soil is needed. But turf loam is expensive,

plants. They have only to add some leaf-mould and a little old turf and nearly all kinds will flourish.

When an attempt is made to grow special alpine plants that need more than ordinary care the "pockets" should be filled with the special soil mixtures they need—mixtures which are referred to in the notes dealing with the best kinds of alpine plants later in the book. Most kinds like broken stone or grit in the soil, and the beginner can scarcely go wrong in using this freely whether his ground is naturally heavy or light.

Some Necessary Precautions. It has already been pointed out that alpine plants are more likely to suffer from the effects of excessive moisture in winter than from cold. Some plants, particularly those

with woolly leaves, are so susceptible to winter damp that they are liable to perish unless precautions are taken to protect them. This is done by means of a piece of glass fixed on wires a few inches above the ground so that the plants will be exposed to the air; the wires are bent at the top so that the glass is held safely. It is chiefly those having woolly leaves and those from the highest altitudes that need this attention.

Other alpine plants, the rock Primulas for instance, are liable



Bulb and flower of the Grape Hyacinth (*Muscari*), a spring flower for the rock garden.

to decay at the "collar" in winter, and it is a wise plan to surround them with broken stone chips, which can be obtained from any nurserymen who specialise in rock garden plants. Such a soil covering is also beneficial in summer, for it tends to keep the roots of the plants moist.

In the autumn when tree leaves

have fallen care should be taken to look over the rock garden for the purpose of removing leaves that have collected there. If they are allowed to remain they may cause the loss of some of the choicer plants.

Watering is usually necessary during the late spring and early summer months, for it is then that alpine plants grow most freely; the melting snows provide them with an abundance of moisture in their natural homes, so the gardener must do what he can towards keeping the soil thoroughly moist at those seasons of the year. Weeds are often troublesome among the rock plants. They ought to be destroyed as soon as noticed, for if allowed to spread some of them will prove a great nuisance and be difficult to deal with.

Pruning Vigorous Rock Plants.

Some of the vigorous plants commonly grown in the rock garden need to be pruned, otherwise they will spread too freely, and if other choice kinds which spread scarcely at all are near them, they may be overgrown and ruined. The best time to carry out the pruning is as soon as the flowers have faded. Plants that need this treatment are *Aubrietia*, the golden yellow *Alysum saxatile*, *Cerastium* or Snow in Summer, *Arabis alba* and its double variety, *Helianthemum* or Sun Rose, *Dianthus cæsius* or Cheddar Pink and other free-growing Pinks, Mossy Saxifrage, and *Iberis* or evergreen Candytuft. All straggling growths should be cut off; in fact, the plants may be cut back so severely that they are reduced to compact tufts. If this is done in early summer immediately the flowers have faded

the plants will soon make fresh growth, and by the end of the summer they will again have formed big masses, which will be far more compact and shapely than they would have been had the plants not been pruned. All these plants become straggling and often bare in parts if they are not treated in this

The dwarf early flowering Irises make delightful little groups here and there in sheltered sunny corners. Some of the best of them are *reticulata*, with violet purple scented flowers; *Histrio*, lilac blue and white; *Danfordiæ*, yellow.

There are some charming flowers among the miniature Daffodils,

The Wood Lily or
Trinity Flower,
Trillium, which
bears lovely white
blooms in April.



way, and in that condition they are not very presentable.

Bulbs for the Rock Garden. It is worth while planting a few bulbs in the rock garden, not only because the flowers of many of them open before the alpine plants are out, and so prolong the season of blossoming, but because those chosen for this purpose are more likely to thrive in the rock garden than anywhere else. Only the miniature bulbs are suitable, and the rock garden provides just those sheltered little nooks they need. They thrive best in well-drained loamy soil with which sand or grit has been mixed, and are planted in September.

e.g., *Angel's Tears*, *Narcissus triandrus*; yellow and white *Hoop-petticoat*, *Narcissus Bulbocodium*; cyclamen-flowered Daffodil, *Narcissus cyclamineus*; and *Narcissus minor* and *Narcissus minimus*, two tiny flowers. They, too, like a sheltered and fairly sunny place, though there must be a fair depth of well-drained sandy, loamy soil beneath them.

The lovely pale blue *Anemone blanda* and the deep blue *Anemone apennina* provide glowing patches of colour in spring; the roots should be planted in a sunny place and in soil with which leaf-mould has been mixed. Here and there

room might well be found for a few of the St. Brigid Anemones, gorgeous flowers in scarlet, crimson, rose, and mauve that must be in a place fully exposed to the sunshine ; there, in mild weather, a few blooms are often open in winter.

The Spring Star Flower. The spring star flower, *Triteleia uniflora*, a lilac purple beauty that is at its best in March or April, does not mind shade, and room might well be found for a few bulbs of *Bulbocodium vernum*, which bears rose purple, crocus-like flowers in early spring.

Autumn and Spring Crocus. Among the species or wild types of *Crocus* there are many charming flowers, and the rock garden is just the place for them : *chrysanthus*, yellow ; *Sieberi*, lavender ; and *Tommasinianus*, lilac, bloom in spring, and the bulbs should be planted in late summer. *Crocus pulchellus*, lilac blue, and *C. speciosus*, purple blue, flower in autumn, and the bulbs are planted in July.

The winter Aconite, *Eranthis hyemalis*, with yellow flowers in a frill of green ; the blue Squills, *Scilla sibirica* and *Scilla bifolia* ; Glory of the Snow, *Chionodoxa Luciliæ*, blue and white, and *C. sardensis*, blue ; the Snakeshead Fritillary, *Fritillaria meleagris*, and *Fritillaria armena*, yellow, are favourites for rock garden planting.

Then there are the Grape Hyacinths or Muscari, the variety Heavenly Blue being very showy ; Snowdrop, both the common sort *Nivalis* and the finer one named *Elwesi* ; and the Dog's Tooth Violets or *Erythronium dens canis*, rose lilac, and *Americanum*, light yellow. One or two of the Tulips

are just the thing for the rock garden, notably *Persica*, yellow ; *Clusiana*, crimson and white, and *Sylvestris*, yellow. All these kinds flower in spring or early summer, and the bulbs should be planted in August or September.

Most of these bulb flowers will come up year after year, and the clumps will gradually increase in size and splendour, providing they are in fairly well-drained, sandy, loamy soil. Care must be taken to mark the places where they are planted, or they may be damaged when the leaves have died down.

Miniature Trees and Shrubs. In a small rock garden there will naturally not be room for many trees and shrubs, but a few of them ought, if possible, to be included, for they are very picturesque, and the miniature Pines and other Conifers provide just that touch of verisimilitude that adds so greatly to the naturalness and delight of the rock garden.

Let us take the flowering shrubs first. One of the most beautiful is the trailing, cream yellow Broom, *Cytisus kewensis* ; if planted so that its branches may trail over a rock ledge it is very charming when in bloom in April. *Cytisus Ardoinii*, with yellow flowers, is of similar habit of growth. *Daphne cneorum*, the Garland flower, is a neat little summer flowering shrub that bears pink and fragrant flowers in April. It likes a peaty soil ; room certainly ought to be found for a plant or two. The better known Mezereon, *Daphne mezereum*, a slow-growing shrub of stiff habit that bears fragrant reddish purple flowers in March, is also worth a place.

The Sun Rose, *Helianthemum*, must be represented, for it is so

easily grown and blossoms so freely ; there are many varieties of different shades of colour. This shrub likes well-drained soil and a sunny place ; it is easily increased by seeds sown in a box of soil in a frame in spring. A small bush of one of the Japanese Maples with highly coloured leaves is very attractive. If a small plant is obtained and put in poor sandy soil it will not grow very large—at all events, for many years.

Every rock garden ought to have

one or two of the pigmy evergreen Conifers to crown its heights. There are many from which to choose: *Abies pygmea*, a small, densely-branched Spruce ; *Cupressus minima*, a miniature Cypress ; *Juniperus prostrata*, a trailing Juniper ; *Thuja Rheingold*, an arbor vitæ with golden leaves ; and a trailing Yew, *Taxus repandens*. Of the deciduous or leaf-losing Conifers perhaps the most attractive is the golden Japanese Larch, *Larix Kämpferi*.

CHAPTER 12

Climbing Plants

THE garden usually owes a good deal of its charm to climbing plants, the Roses, Clematis, Honeysuckle, and others. Not only are they fascinating when in full bloom, but they help to give variety of outline to the garden, form vistas, and generally add to its charm by veiling the outlook and deepening the sense of mystery. Even the most ordinary garden can often be transformed by the use of climbing plants trained over suitably placed pillars, arches and arbours.

The secret of success when planting vigorous climbing plants is to prepare the ground thoroughly by taking out a hole not less than 2 feet across and of similar depth, and to add some yard manure to the lower soil. All wooden posts should be creosoted for 2 feet from the base or set in concrete, otherwise they will not last for long. Iron posts are in many ways the most serviceable, but they do not look so well as those of wood. Climbing plants are said not to thrive on iron supports, but that is not so, though generally perhaps they do better on those of wood.

Among vigorous climbing plants the Roses are of chief importance. As these are dealt with in the chapter on Roses they need not be referred to at length here. Unfor-

tunately, the rambler Roses are summer flowering only, though they may bear a few blossoms again in autumn. Some of the climbing Teas and Hybrid Teas are perpetual flowering, yet they do not provide such a brilliant mass of colour in summer as the ramblers do.

The Clematis. Easily next in point of importance among climbing plants comes the Clematis. It is now represented in gardens by many species and varieties, and a selection may be planted that will provide flowers in spring, summer and early autumn. One of the first to flower is the Mountain Clematis (*C. montana*), which bears rather small white flowers in May. It looks very beautiful when trained over a house wall, and especially if in association with Wistaria. The large-flowered varieties of Clematis belonging to the *patens* and *florida* groups blossom in May and June; some of the best of these are Marcel Moser, white with coloured bars; Nellie Moser, pale lilac rose with deeper bars; Fair Rosamund, white; Belle of Woking, double, grey; and Countess of Lovelace, double, lilac blue. These are followed by the Clematis *lanuginosa* varieties, of which some of the most beautiful are Henryi, cream white; Beauty of Worcester, violet blue; Lady

Northcliffe, blue ; and Crimson King, crimson.

Then comes the Jackmanni group, containing the familiar purple-flowered Clematis Jackmanni, and its varieties Snow White, white, and Superba, intense violet. Other good varieties of this group are Madame Veillard, pale lavender ; Star of India, purple with reddish bars ; Comtesse de Bouchard, satin rose, one of the loveliest of all ; and Madame Ed. André, reddish.

For late summer flowering Clematis flammula, a very vigorous kind bearing a profusion of small



The yellow Winter Jasmine is pruned as soon as the flowers have faded

cream-white flowers, and tangutica, with yellow flowers, may be chosen.

The site for Clematis should be prepared with great care, for the plants are sometimes difficult to establish. Without apparent cause they are liable to die down, though sometimes they may start into fresh growth again from the base. A hole, some 2 feet deep and of similar width, should be taken out ; if the ground is clayey it is advisable to put in some broken bricks for drainage. With the lower soil some well-decayed manure may be mixed, and with the upper soil lime and brick rubble ought to be added freely. A scattering of lime on the surface, this being forked into the soil, is also beneficial. If possible a

position should be chosen for Clematis where the lower part of the stem will not be exposed to full sunshine ; shade, such as is afforded by neighbouring shrubs or herbaceous plants, is beneficial.

How to Prune Clematis. Some care is necessary in pruning Clematis when the space available is restricted. If there is plenty of room they may be allowed to grow unpruned, otherwise some pruning is required to keep them within bounds. The varieties of the Jackmanni group should be cut to within 12 inches or so of the base of the previous summer's growth in



Clematis of the Jackmanni type is pruned in winter or early spring, as shown.

February. Clematises of the lanuginosa group may also be pruned at that time, though less severely. Varieties of the patens and florida groups, which bloom in early summer, should be pruned as soon as the flowers are over by thinning out some of the older shoots and generally pruning back those that have become straggling. The Mountain Clematis (*C. montana*) requires no regular pruning.

The Honeysuckles are general favourites, yet they are often far from satisfactory as garden flowers because they are planted in unsuitable positions, with the result that they become smothered with greenfly in the summer and lose their attractiveness. A position in

the open garden, away from house or garden wall, suits the Honey-suckle best. The common Woodbine (*Lonicera Periclymenum*), *Belgica*, and *Caprifolium* are some of the most useful kinds. So far as pruning is concerned, the best plan is to thin out the growths where they are crowded as soon as the flowers are over.

Ceanothus and Jessamine. Many shrubs which are not strictly climbers will reach a considerable height when trained against a house or wall, and some of them are very beautiful. Chief of them are *Ceanothus Veitchianus*, which bears blue flowers in spring and early summer; *Ceanothus Gloire de Versailles*, blue flowers in summer; *Cratægus Pyracantha* (Firethorn), an evergreen with brilliantly coloured berries; *Pyrus japonica* (the Japanese Quince), red flowers in early spring; and the Summer and Winter Jessamines, which have white and yellow flowers respectively. The Passion Flower (*Passiflora cærulea*) is grown out of doors on warm walls in the southern counties, and another showy climber, *Eccremocarpus scaber*, which has orange-scarlet flowers in late summer, is suitable for a warm position in similar localities.

Ivy is, of course, well known as a climbing plant, but it is far too freely grown, and its place might well be taken by some of those already referred to. Some of the finer varieties of Ivy are well worth planting, and they are not so vigorous as the common kind.

The ornamental Vines, such as *Vitis Coignetiae* and *Vitis Thunbergii*, are very handsome climbing plants, grown for the sake of their leaves alone; these are large and handsome, and in autumn they colour well.

The Wistaria, when well established, is perhaps the most beautiful of all hardy climbing plants grown in this country. It thrives best on a wall facing south or west, and is seen to great advantage also when trained over a pergola, or on a tall pillar or post. In summer the side shoots of the main branches should be pruned back to six leaves or so, and shortened again in winter. Such treatment causes flower buds to form freely. *Wistaria sinensis*, the kind commonly grown, is the best for general planting. *Wistaria multijuga* has very long mauve flower bunches, and its white variety is beautiful.

CHAPTER 13

How and When to Sow Seeds

SPRING-TIME is the natural season for the germination of seeds. Then we sow with a view to filling the greenhouse or garden with flowers, or our vegetable garden with good crops of vegetables. Our hopes are, however, sometimes "nipped in the bud" when we find that after a period of anxious waiting the seeds "do not come up." There would not be so many failures, however, if the three simple rules of seed germination were observed.

These are the provision of the correct amount of warmth, moisture and air, the latter being the most essential of all. If ordinary seeds, such as peas, beans, or mustard, are examined, they will be found to consist of the following parts. The external part is the testa or seed coat, which is provided as a protection for the seed in its dormant state. Inside the testa are two large cotyledons or seed leaves; these contain the reserve of food on which the plant feeds in its very young state. Between these cotyledons we find a very tiny embryo, which is really the young plant and consists of a plumule, or young shoot, and a radicle, or young root. An elementary knowledge of the functions of all these parts is of great assistance to the gardener, inasmuch as he can ensure that they perform

their functions properly by providing the right conditions.

If a seed which has been soaked for several hours is squeezed, it will be seen that a small drop of water will issue from a hole near the scar. This hole is known as the micropyle, and forms the principal entrance for the water. The water enters through the micropyle and permeates the tissue of the cotyledons, and if sufficient warmth is present growth commences. As soon as active growth has commenced, oxygen is taken in by the seedling and carbon dioxide is given off. These processes cannot take place unless the soil is well aerated.

If the soil is hard or the seeds are too deep in the soil, air will not be able to reach the seed easily, the carbon dioxide will be unable to escape, and it will accumulate and "gas" the seeds. It has been found that by drawing a current of air through the soil in which seeds have been sown germination takes place much more quickly. To ensure that the seeds have sufficient air it is essential that they are covered with just sufficient soil and no more.

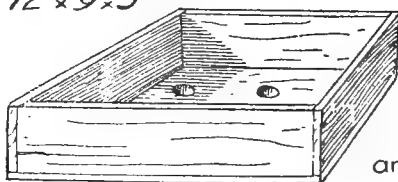
How Deep to Sow Seeds. A good guide is to cover them with a depth of soil equal to four times their greatest diameter. This means that large seeds like the pea and bean will be buried to the depth of

between one and two inches, according to the size. Very tiny seeds, such as begonia, gloxinia, etc., will need the very lightest of covering; in fact, it is usual to sow them on the surface or else to give a very thin sprinkling of silver sand. When sowing seeds in pots the amount of water can be regulated by soaking the potful of soil and allowing the

surplus to drain away before the seeds are sown. A sheet of glass laid over the top of the pot will ensure that the soil is kept uniformly moist until germination has taken place.

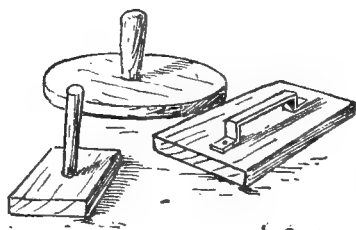
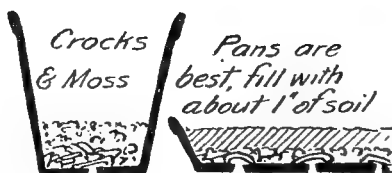
The best temperature for the germination of seeds is governed by the natural habitat of the plants. Tropical seeds require from 60 to 80

12" x 9" x 3"



A useful form
of seed box
and easy to make

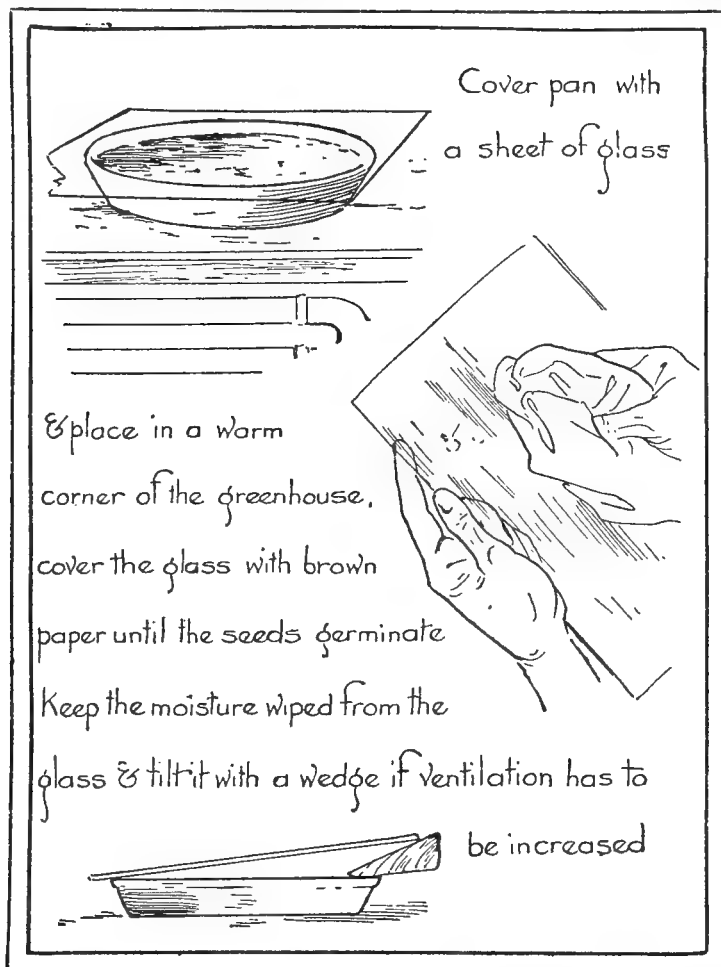
Allow plenty
of drainage
material; bad
drainage means
bad germination



These tools will
come in handy
for the purpose of
levelling the surface of soil.

degrees, subtropical seeds from 55 to 65, half-hardy seeds 45 to 55 degrees, and hardy seeds 40 to 50 degrees. Most of our vegetable seeds are derived from plants which were

Raising Plants from Seed. This opens out to every amateur a wide field of experiment, experience, and enjoyment. There is no branch of gardening which ought to appeal



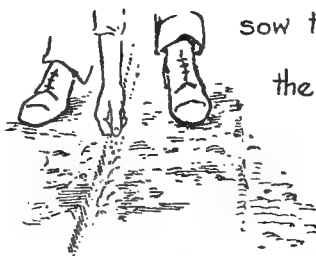
natives of temperate regions, and therefore germinate quite freely out of doors as soon as the soil has been warmed by the sun, late in March and during the month of April.

more to the keen amateur, whether he is a beginner or experienced, than this practice of watching and encouraging the development of all manner of plants through every

Shake the seed
into the palm of
the hand, a little
at a time,



Walk astride the drill and
sow thinly and evenly with
the wind,



then cover
the seed
lightly with the rake;



stage of their existence. The number of plants which can be easily raised from seed is very great, and it is not too much to say practically everything can be reared from seed.

In the nurseries of the big gardening establishments seedlings of almost every kind of flowering plants, shrubs, and even trees are raised annually; and although the ordinary amateur cannot expect to

have appliances, the labour, and the seeds which are available in such nurseries, yet there is no one, however amateurish his arrangements may be, who cannot with a little trouble fill his garden with beauty and interest from plants which he himself has reared from seed.

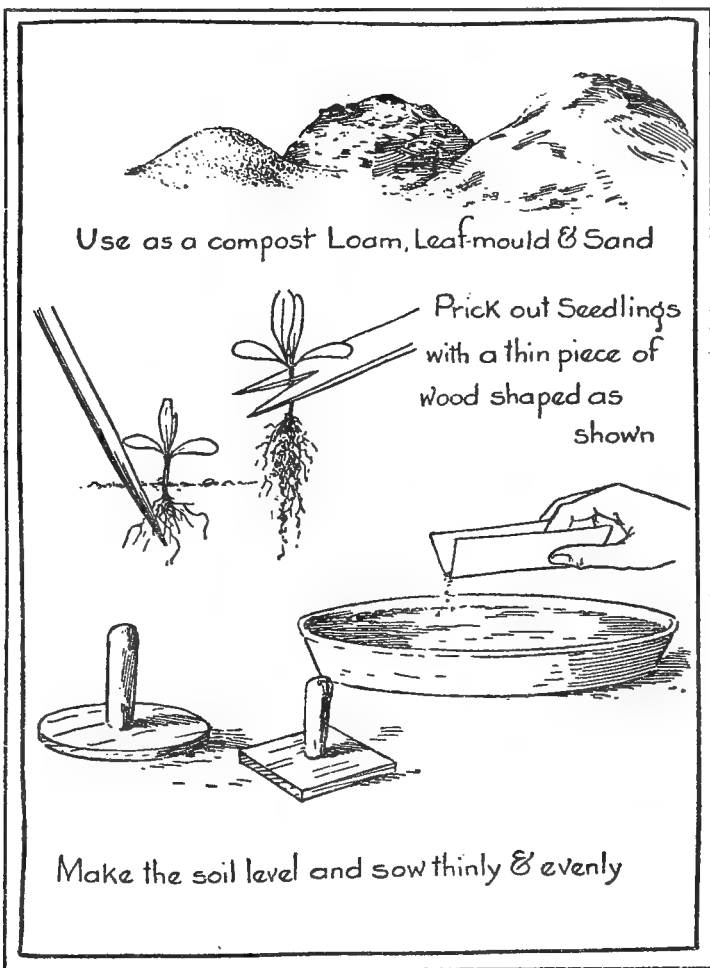
Seed-sowing is the great experimental field of the amateur. There

is the experiment which the beginner makes when he sows his first seeds, and there is the experiment which is made by the research student when he watches the progress of the seedlings of some successful trial in hybridisation.

Many amateurs begin their experiments with seeds which generally require a good deal of experience to ensure success. Well,

no one can forbid experimenting ; on the contrary, it is very much to be encouraged in all branches of gardening ; but the beginner will be well advised to make a start with seeds which are not too difficult to manage, and not too expensive to buy.

When to Sow. There is a right time to sow and a wrong time ; seeds may be sown too deeply, or



not deeply enough ; the soil may be kept too moist, or it may be allowed to become too dry ; there is the right temperature to think of, and the most suitable compost. In fact, there are all kinds of things which are quite impossible for a beginner to make his own from simply reading books and magazines, but which gradually come quite naturally to him as he continues his experiments.

Seeds may be sown in the open ground, in boxes, in a greenhouse, or under handlights, and in a cold frame, and little details should be noticed and thought about. Seedlings in boxes will have to be "pricked out" or transferred into other boxes, and experiments will have to be made as to the best method of lifting the tiny seedlings and planting them to the best advantage in the other box.

Seedlings in the open ground will have to be thinned out, and an observant amateur will soon discover from his experiments how much thinning is necessary to ensure a sturdy development of the seedlings. It will not be very long, as time is reckoned in gardening, before he will find that seeds begin to respond to his treatment, and, if he has anything of the gardening instinct, he will not be able to help feeling that the little seedlings which come up really enjoy being looked after, and resent carelessness and neglect.

One day the beginner will awake to the fact that his experiments have taught him experience, and he will look back to those days when, in spite of mishandling, seeds used to come up, as far off and remote. Now, with the experience he has gained, he attempts to rear new (at

least to him) and interesting plants, and finds with a very real satisfaction that the seeds germinate and the plants flourish.

There are seeds of all kinds to be sown ; hardy and half-hardy, annuals, biennials, perennials—an inexhaustible supply, as any good seedsman's catalogue will show. Experiment has become experience, but so far from experience destroying the enjoyment of experiment, it has opened out a vast field of fresh opportunities in this direction. There is, indeed, untold enjoyment in growing plants from seed, and a variety of interest which can never be equalled by that which is derived only from the division of plants, or cuttings and layers.

Take, for instance, the case of Carnations: one good named variety will give you seven or eight excellent layers for the succeeding year, and you will know exactly what flowers to expect. But sow a packet of a good strain of Carnation seed, and the following year you will have the enjoyment of watching all the seedlings coming into flower without knowing in the least what the colours will be. For sheer enjoyment and variety of interest nothing touches the practice of growing plants from seed.

The best time for sowing seeds out of doors is in April, May, and June. The exact date is of no consequence, but what does matter is the state of the ground and of the weather. It is useless to sow seeds when the soil is wet and cold, for they are more likely to decay than to germinate.

It is a mistake to cover seeds deeply. Small ones, such as those of Carrot, for instance, need the slightest covering of soil, just as

much as is given by passing the rake over the seed bed. Others, Candytuft for instance, should be a quarter of an inch or so deep, while large seeds, as for example those of Sweet Peas, may be from half an inch to one inch down. Needless to say, it is a great mistake to sow seeds very thickly; the seedlings will be crowded and spoilt unless they are thinned properly, and thinning is a tiresome business when the little plants are very thick together.

When sowing seeds under glass it is necessary to prepare a suitable compost for the pots or boxes, which must be clean and well drained. If old soil is allowed to remain in them the roots of seedlings will cling to it and it will be difficult to transplant them. A suitable compost for the seeds of all plants commonly grown in gardens consists of sifted loam two-thirds, sifted leaf-mould one-third, and a free scattering of sand; the ingredients ought to be well mixed. If loam (decayed turf) is not available, ordinary garden soil will do if some extra sand is added.

The pot or box should be filled almost to the rim, otherwise it will be difficult to take out the seedlings when the time comes to transplant them. The seeds are scattered thinly on the surface and a sprinkling of sand or sifted soil is used to cover them. In sowing large seeds they should be half an inch or so deep, the pot must be filled to within about half an inch of the top, the seeds put on the soil and then covered: that is better than making holes in the soil.

When the soil has been well moistened by means of a syringe that gives a fine spray, the pots and

boxes should be covered with brown paper; this prevents the soil from becoming dry and obviates the need for frequent watering. The best way to moisten pots or boxes of seeds is to immerse them almost to the rim in a pail of water, and to keep them there until the moisture is seen to rise to the surface.

When the seedlings show through the paper covering must be removed and the pots and boxes kept well up towards the light, otherwise the little plants may become "drawn" and weakly. Before they get crowded they must be transplanted at a greater distance in other boxes of similar soil.

Seedlings raised out of doors need attention as soon as they show through the soil. Weeds must be removed and the soil between the rows (it is far better to sow in rows than broadcast) ought to be hoed frequently. If the plants are not to be transplanted, they must be thinned before they become crowded; if they are to be moved to a reserve border, transplanting must be attended to before they are in danger of spoiling each other.

Flowers that Sow Themselves. There are some flowering plants that it is difficult to keep in a flourishing condition, however great care is taken; there are others that it is impossible to get rid of when once they are established in the garden, because they increase at an alarming rate by means of seedlings which develop from self-sown seeds. The best of the latter type are undoubtedly splendid plants for the beginner, for they are attractive, they will grow in all sorts of soils and positions, and it is a simple matter to maintain a continuous supply of fresh, vigorous plants. As

a matter of fact, the chief difficulty lies in keeping their numbers within reasonable limits.

The double Feverfew, which grows 18 inches or so high and becomes smothered in small white blossom, is a flower that sows itself very freely. It is easy to destroy those that are not wanted, and the remainder prove very useful for transplanting to the positions where they are needed. Its botanical name is *Chrysanthemum inodorum plenisimum*.

The Evening Primrose (*Oenothera biennis*) is another plant that deserves to be included in this list, for the seedlings spring up in all sorts of unexpected places, usually where they are not wanted, but there is no difficulty in transplanting them to the required places. The Foxglove, when a few plants have been grown in a garden, is almost certain to spread by means of seedlings, which may be lifted when they are of fair size and planted on a shady border, for that provides the conditions which they prefer.

The Valerian (*Centranthus ruber*) is a familiar wild plant in some districts, but it is not to be despised for the garden on that account, especially if the deeply coloured variety named *coccineus* is chosen in preference to the typical kind, which has paler flowers. The Valerian is quite showy when at its best, and the plants are in bloom to a greater or less extent for many weeks.

Some of the Poppies spread amazingly by self-sown seeds, particularly a beautiful apricot-coloured one named *Papaver rupifragum*. The seedlings appear in numbers in many widely separated parts of the garden. It is, however, a beautiful

Poppy, but it must be seen before the day is far advanced, for the petals fall in the afternoon.

In some gardens that charming Bellflower, *Campanula lactiflora*, spreads quickly by means of seedlings, but it is a beautiful plant when its milk-white flowers are at their best, and there is no need to destroy many of them.

Pansies and Violas often scatter their seeds freely, and any garden where these flowers are grown can usually provide seedlings. Unfortunately the Violas are scarcely worth keeping, for the seedlings are not so fine as those of the named varieties from which they sprang. The seedlings of *Viola cornuta*, a small-flowered kind, are, however, an exception, and these are worth taking care of.

The Himalayan Jacob's Ladder (*Polemonium himalayanum*), a tall, vigorous border plant that bears violet-blue flowers in summer, sows itself freely, and here and there one may find seedlings of the scarlet Geum, Mrs. Bradshaw. The single-flowered Pinks sow themselves if they are grown in a sunny place in light soil.

A rock garden plant that deserves passing mention is the white Stonecrop (*Sedum album*). Once a plant of this becomes established in the garden, you will find small ones in all sorts of odd corners, for every little piece that is broken off or otherwise detached will soon take root where it falls. It becomes smothered in white blossom in summer, and is then very attractive; it is of low-creeping growth. Such plants as these are admirably suited to amateurs' gardens, for they give little trouble.

CHAPTER 14

Bulbs to Plant in Autumn

SINCE one cannot do very much for bulbs after they are planted, it is wise to do all that is possible to ensure success at planting time. Autumn is commonly considered to be the correct season at which to put in bulbs. While this is generally, it is not wholly true, and the amateur who restricts his planting to the autumn months will miss some very charming flowers. For the sake of convenient reference the chapters dealing with the various hardy bulbs are arranged with respect to the season at which planting should be done, so that the reader may be able to ascertain at a glance the kinds to plant in autumn, spring, and summer.

It goes without saying that the finest flowers can only be obtained if the ground has been properly prepared before the bulbs are put in. I am not going to advise that the soil be dug 3 feet deep and that an elaborate concoction of manures be mixed with it, for the amateur grower does not follow that sort of advice; but I should like to impress upon the reader that his display of blossom will be much finer if the ground is prepared in a reasonable way. That is to say, it should be dug 18 inches deep a few weeks in advance of planting; and as for manure, there is nothing more satis-

factory than bonemeal, a handful of which to the square yard is scattered on the soil about 12 inches or so beneath the surface. This is a far better practice than scattering the bonemeal on the surface and then digging it in. Such preparation as this, together with early planting, will lead to good results.

When to Plant. Now, "early planting" may be regarded differently by people with varying objects in view. Those who grow for exhibition plant their Daffodil bulbs in July, for instance, and there is nothing to be said against the practice, for the sooner the dormant bulbs are put in the longer will be their season of growth, and consequently the finer are the flowers likely to be. But such a proceeding is out of all reason in an ordinary garden, for July is the month in which the Roses and Carnations and hardy flowers generally are in the height of their beauty, and the average amateur is far too engrossed in his enjoyment of them even to think about ordering spring-flowering bulbs, much less of planting them.

Unfortunately, so many go to the other extreme and give no thought to the subject of bulbs until autumn has really set in, and November, with its dank, foggy days, makes gardening far less pleasant to the

gardener, while the soil has become sodden and therefore not in a suitable condition for planting. I would strongly recommend the reader to get in all his spring-flowering bulbs by the middle or end of October, with the possible exception of the May-flowering (Cottage and Darwin Tulips), which may be left until November, as they do not come into bloom until late spring and early summer. All the small, early-flowering kinds, such as Crocus, Snowdrop, Winter Aconite, etc., ought to be planted in August and September, otherwise they will yield a poor display the first season.

Depth at which to Plant. A good deal of bewilderment exists as to the depth at which bulbs ought to be planted, and it is safe to say that the majority are not put in the ground deeply enough. I have often seen in amateurs' gardens Hyacinth and Narcissus bulbs of which the tops were visible on the soil surface. One would not think this sort of planting possible, yet it is done. Small bulbs, of which good examples are those of Fritillary and Glory of the Snow, should be put at such a depth that there is about 2 inches of soil above them; larger bulbs, such, for example, as those of Hyacinth, Tulip, and Daffodil, ought to be so planted that the tops are covered with from 3 to 4 inches of soil; while the May Tulips may with advantage have 4 to 5 inches of soil above them. Lilies need to be planted at varying depths, for some form roots on the stem as well as from the bulb; but such exceptional cases are referred to in the notes dealing with each flower.

When one is planting a flower bed with spring bulbs, and it is of

importance to have the display as uniform as possible, care must be taken to put all the bulbs at a similar depth, otherwise the blossoming may be irregular. There are two ways of ensuring this. One, and probably the better, method is to remove the soil to the required depth all over the bed, rake it level, and slightly embed the bulbs on the exposed soil, subsequently replacing that which was removed. Another plan is to use a dibber or blunt stick, such as can be fashioned from a broom handle, and run a piece of wood through a hole bored in the handle; the distance from the bottom of the dibber to the piece of wood will then indicate the depth of hole. A notch cut in the dibber will serve the same purpose.

If care is taken in making the hole not to bury the dibber deeper than the notch or piece of wood, the planter is assured that the bulbs are put at the same depth, providing always that they are placed at the bottom of the hole. There is a danger, especially when too sharp-pointed a dibber is used, that the bulb may become fixed in the hole about an inch from the bottom; care should be taken to make the bottom of the hole wide enough to allow the bulb to reach it easily.

Bulbs should be Grouped. Bulbs look far better in groups than they do in lines, and from five or six to a dozen should be placed in a group, or even more if practicable. Spring-flowering kinds look very charming in a mixed border of hardy flowers, though many people consider them a great nuisance after the flowers are over. However, if they are put among the

strongly-growing plants, such as Michaelmas Daisy, Sunflower, or Helenium, their unsightliness soon becomes hidden; or if they are near the front of the border one can sow annuals among them and cut off the yellow portions of the leaves as they change colour.

An alternative method is to lift

the bulbs very carefully as soon as the flowers are over, and to lay them in a shallow trench dug in some other part of the garden, where their untidy appearance matters less. The roots and lower parts of the stems must be covered with soil. There the bulbs may remain until the leaves have



Cape Hyacinth
(*Galtonia candicans*)

blooms in August
plant now about
3" to 4" deep



and fully 12 inches apart



withered, when they should be taken up, cleaned, and stored until planting time.

Bulbs and Roots to Plant in Autumn. If one can sufficiently disregard the pungent odour that is characteristic of Allium, or ornamental Onion, to be able to look upon them as ornamental plants (and it is not apparent until the leaves or stems are bruised), there

will be found several of considerable garden value. They thrive in quite ordinary soil, and blossom in spring and early summer. The commonest is *Allium neapolitanum*, 15 inches high, with bunches of white, green-centred flowers; it will thrive in shade, and is useful for naturalising in odd corners or for growing in pots. *Allium ursinum*, with white flowers, is also useful

Gladiolus

should have Woodashes
Sand and Leaf mould
mixed with the soil
before planting.



they should be planted about 3 inches
deep and 6" to 8" apart in clumps



for shady spots. *Allium karata-viense* is a quaint plant possessing wide, blunt leaves and heads of pinkish bloom. The Golden Garlic (*Allium Moly*) is quite attractive when, in May, its heads of yellow flowers are at their best.

Alstroemeria (Peruvian Lily). The roots of this are not bulbs, but are thick and tuber-like. They are not especially hardy, and in cold

districts should be planted in a warm spot, as, for example, at the foot of a wall. Well-drained, loamy soil is essential, and if the ground is heavy, leaf-mould, turfy soil, and sand should be dug in. Place the roots about 4 inches below the surface and leave them undisturbed from year to year, until they become crowded. *Aurantiaca* (orange yellow with reddish

3 parts turfy loam 1 part Mould

1 part sand

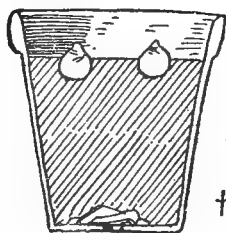


form a good compost for Bulbs

Don't ram the compost too firmly under the bulbs or the roots will not easily penetrate



Drainage



This is quite deep enough to pot large bulbs such as Tulips and Hyacinths

markings), *chilensis* (variously coloured), and *psittacina* (crimson with brown and green markings) are good sorts.

Anemone (Windflower). There are many charming flowers among the tuberous-rooted *Anemones* of spring and early summer, and delightful displays may be obtained by planting them freely in groups in the rock and flower garden. One of the earliest is the blue Apennine Windflower (*apennina*), which may be naturalised in grass, grouped among thinly planted shrubs, or in the rock garden. The pale blue Grecian Windflower (*blanda*) is best suited to the rock garden;



Montbretia corms should be lifted and separated every few years.

while *nemorosa* (pinkish white) and *Robinsoniana* (blue) may be planted among shrubs and in various shady nooks and corners. All these like a somewhat leafy soil, though ordinary ground that is not clayey will suit; the roots are planted 1 to 2 inches deep in September. The Poppy *Anemones* (varieties of *coronaria*) make a brilliant show in early summer; plant in October in well-prepared ground.

When the foliage has died down in summer the roots may be lifted, dried, and stored until autumn; but it is not necessary to take them up except in heavy soil. Poppy

Anemones are easily raised from seed, which should be gathered and sown as soon as ripe, in July, on a prepared bed out of doors, when they will bloom the following year. There are many strains of Poppy *Anemones*, of which the St. Brigid, French, and chrysanthemum-flowered are types, and the flowers show a wide range of colour. *Anemone fulgens* (Scarlet Star Flower) makes a most brilliant show in late spring; it should be given well-drained loamy soil and a sheltered place. All these *Anemones* are charming for pots in the cold or slightly heated greenhouse.



The Daffodil or Narcissus is represented by many types and varieties.

***Antholyza paniculata*.** One does not often find this plant in amateurs' gardens; its handsome leaves remind one of those of *Iris* or *Gladiolus*, and the red and yellow flowers, which open in July, are showy. A warm position should be chosen for the roots, which are planted 4 or 5 inches deep, and if the soil is heavy it must be made lighter by the addition of leaf-mould and sand. It is advisable to lift the roots in autumn and replant in spring in cold localities.

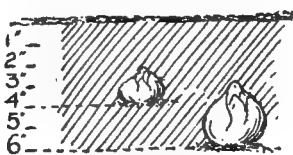
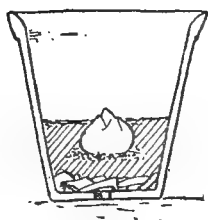
***Apios* (Ground Nut).** This is a twining tuberous-rooted perennial of slender growth, which bears purplish pea-shaped flowers in

Lilium Auratum

Lilium Speciosum

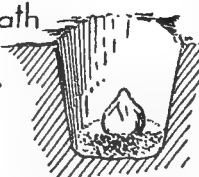
Lilium Tigrinum.

Plant Lilies in
pots leaving space as
shown to be filled later.



Plant bulbs 4" to 6"
deep according to size

When planting place
Sand beneath
the bulbs.

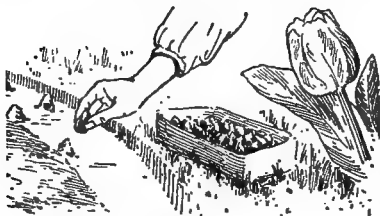


July. Plant the roots in well-drained soil in a sheltered spot, either against a shrub or a trellis over which the shoots may grow.

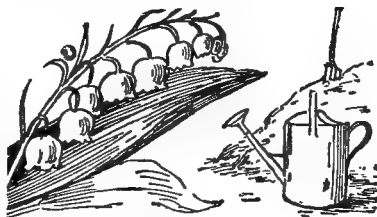
Asclepias tuberosa. This is a brilliant tuberous-rooted perennial, bearing heads of orange-coloured flowers from July onwards. It dislikes cold, heavy soil; but if planted either in autumn or spring in a well-

drained position and in sandy loam and peat, and protected by a heap of ashes in winter, it will thrive.

Arum (Dragon Flower). The Arums are far more curious than beautiful, but as they will thrive in partially shady corners, which are often left bare, attention may well be drawn to them. *Arum dracunculoides*, which grows 2 feet



Tulip bulbs should be planted in October-November.



The best time to plant Lily of the Valley is in October.

or more high, with greenish spathe in summer, and *Arum cornutum*, not quite so tall, and having a dark, blackish spathe in spring, are two of the chief kinds. The roots are planted about 4 inches deep in October.

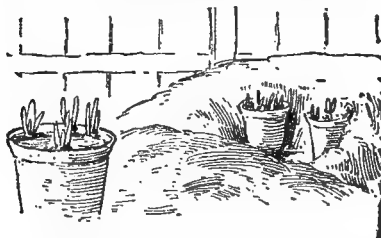
Brodiaea (Californian Hyacinth).

The *Brodiaeas* are pretty, early summer-flowering bulbs that should be planted in September or early October in a warm, sheltered position in well-drained soil, and be covered with 3 inches of soil. They are not very hardy in cold gardens, and some winter protection, such as is afforded by ashes, is desirable. The bulbs dislike being disturbed. The above remarks apply especially to *californica* (heliotrope), *coccinea* (red with green tips), *congesta* (lilac), and *laxa* (violet blue), all of which grow from 15 to 24 inches high. *Brodiaea uniflora* (known also as *Triteleia*) is much hardier, and may be planted among shrubs

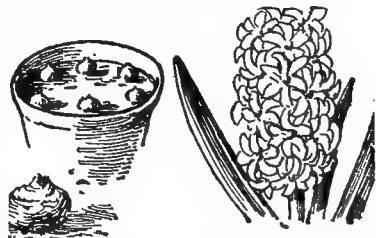
or in any odd corners; it grows 6 or 8 inches high, and bears mauve-white blooms in April.

***Bulbocodium vernum* (Spring Meadow Saffron).** This bears rose purple, somewhat crocus-like flowers in spring, and these are followed by large, bold leaves. The bulbs are planted 3 inches deep in September, usually in the rock garden, and thrive in ordinary soil.

***Camassia* (Quamash).** The amateur altogether neglects the *Camassias*, yet some of them are most attractive. The bulbs are planted in October, 4 or 5 inches deep, and the tall spikes, crowded with small blooms, are in full beauty in May. *Camassia esculenta* is one of the best, having spikes of pale blue blossom. *Leichtlini* (cream-coloured) and *Cusickii* (lavender blue, 3 feet high, and tallest of the three) are also attractive. They thrive in ordinary soil, and may be left undisturbed for several years.



Bulbs grown in pots are placed under old ashes for six weeks.



Hyacinths are favourite spring-flowering bulbs to grow in pots.

Chionodoxa (Glory of the Snow).

This is one of the most charming of the early bulbs, its bright blossoms opening in March and April. The commonest is *Lucilæ* (blue with white centre); it should be planted freely wherever there is room, in the rock garden, towards the front of the flower border, and in the shrubberies. Another good kind is *sardensis*, of which the flowers are deep blue. The bulbs ought to be planted in August and September, being covered with about 2 inches of soil.

Convallaria majalis (Lily of the Valley). Most people like to grow a few clumps of Lily of the Valley, and there is no difficulty about it if there is a shady border in the garden; the soil must be dug about 18 inches deep, and some leaf-soil and rotted manure mixed in. October is the time to plant the roots, which may be left undisturbed for years if placed 2 or 3 inches apart. They should be at such a depth that the tops are just beneath the surface. Lilies of the Valley are often unsuccessful because the plants become crowded and the soil gets impoverished. Much good is often done by top-dressing with either leaf-soil or manure in autumn, but when the plants deteriorate it is best to take them up in October, divide, and replant.

Crocus. The Crocus is such a general favourite and so widely grown that comparatively little need be said about its cultivation. One of the chief points is to put the bulbs in early, in August or September, for then the spring show is so much better than if planting is delayed until late autumn. The roots should be covered with 2 to

3 inches of soil. Apart from the common purple, white, and yellow varieties that are so freely planted, there are some beautiful flowers among the species or true wild Crocuses. Of those that bloom in spring and need planting in September are *aureus* (yellow), *tommasinianus* (lavender), and *versicolor* (white and purple).

Some there are that blossom early in the new year, such, for example, as *Imperati* (violet brown), *Sieberi* (lavender blue), and *Cloth of Gold* (yellow shaded with brown). If these kinds are planted out of doors they should be put in sheltered situations, such, for example, as in nooks in the rockery, quite close to creeping plants, through which the flowers may grow; they are admirable for cultivation in pots. There are now some excellent named varieties of Crocus, which produce much finer blooms than the common sorts, for example: *David Rizzio*, purple; *King of the Blues*, deep purple; *King of the Whites*, white; *Margot*, lavender; and *purpurea grandiflora*, deep purple.

Cyclamen. The hardy Cyclamen are delightful little flowers for the rock garden and for planting in half-shady nooks among Ferns. Some bloom in spring, others in autumn. All like cool, partially shaded positions, and a soil consisting of loam and leaf-mould with which brick and mortar rubble are mixed. Providing the natural soil is fairly light, it is necessary only to have it dug and leaf-mould and rubble incorporated. The roots of those kinds that bloom in spring are planted in August or September, and should not be buried deeper than 1 inch below the surface.

Cyclamen are very long-lived, and may be left undisturbed for many years. They are very charming when grown in pots for the cold greenhouse. Earliest of all to flower is *cilicicum*, purple and white; a beautiful little kind is *Coum*, with purplish blooms and round leaves; *ibericum*, purplish with marbled foliage, and *repandum*, with crimson flowers and prettily marbled foliage, are others that bloom in spring. Reference to those that blossom in autumn is made in the advice on "Bulbs to Plant in Summer."

Erythronium (Dog's - tooth Violet). The various kinds of *Erythronium* are attractive spring flowers, the bulbs of which are planted in September or October, about 3 inches deep in ordinary soil with which sand is mixed; if the ground is unusually heavy it is best to add a little leaf-mould also. They are most commonly planted in the rock garden in a moderately shady spot, although some of the taller kinds are suitable for the margin of the flower border; they are left undisturbed from year to year. The flowers, which are drooping, on stems varying from 6 to 12 inches high, are of various colours, and the leaves are prettily blotched with purple.

The Common Dog's-tooth Violet is *Dens canis*; it grows only some 5 or 6 inches high, and the blooms are of white or shades of purple and rose. Other fine sorts which grow taller are: *americanum*, yellow and brown; *californicum*, pale yellow; *Hendersoni*, lilac; *Johnstoni*, rose; and *revolutum*, rose pink.

Eranthis (Winter Aconite). Everyone knows this dainty little yellow flower nestling in a frill of

green, which opens early in the new year and makes a brave display on sunny winter days. The roots may be planted in the rock garden, among shrubs or in short grass, and if put about 2 inches deep in August or early September and left undisturbed they will increase in beauty from year to year.

Eremurus (King's Spear). This is a noble flower of early summer; the vigorous spikes of some kinds reach a height of 6 feet or more, and the upper part of the stem is covered with small flowers, chiefly of pale colouring. There should be a clump of *Eremurus* in every amateur's flower border, while they look exceedingly well also if planted towards the top of a high rockery. The roots, which ought to be planted in October, are of striking form; they are thick, and radiate from the central growing point like the spokes of a wheel; they must be covered with 4 or 5 inches of soil. The ground needs to be deeply dug and well drained, and if it is naturally heavy it is wise to mix in some leaf-mould and sand. To keep them safe through winter, place a mound of ashes on the ground immediately above them. The *Eremuri* greatly dislike being disturbed, and should be left alone from year to year; they do not usually flower the first season after planting.

One of the most attractive kinds is *Bungei*, which has blooms of soft yellow colouring and grows only some 4 to 5 feet high. The most vigorous of all is *robustus*, which may reach a height of 7 or 8 feet when established; the flowers are pale rose pink. Another vigorous kind is the white-blossomed *himalaicus*; while *Warei*,

equally strong-growing, has reddish yellow blooms.

Fritillaria (Fritillary). For some reason the beautiful Fritillarias are somewhat neglected by amateurs, yet when in bloom they never fail to arouse admiration; their drooping and often prettily speckled flowers are distinct and attractive. The bulbs are planted in September or early October, and, except for a few choice sorts, ordinary garden soil is suitable. Probably the kind most commonly grown is the Crown Imperial (*imperialis*), which bears large, drooping flowers of various shades of yellow and red on strong stems some 2 to 3 feet high, in April. The bulbs of this kind should be put at least 4 inches deep. The Snake's Head Fritillary (*Meleagris*) is far less vigorous, but its white or purplish, prettily spotted flowers are most attractive; the bulbs of this are put about 3 inches deep. Several smaller kinds are charming plants for the rock garden, where they should be planted in sandy, loamy soil in partial shade. Some of the best are *armena* and *pudica*, yellow; and *recurva*, orange yellow.

Galanthus (Snowdrop). One can scarcely have too many Snowdrops in the garden, for no flower of early spring is more welcome. The essential details of cultivation are to plant the bulbs in August, covering them with about 4 inches of soil, and to leave them undisturbed from one season to another. They thrive in ordinary soil, and are suitable for planting in short grass, beneath shrubs, or in clumps in the rock garden or flower beds and borders. Very few places come amiss to them. Amateurs nearly always plant the common kind

(*Galanthus nivalis*), but there are several finer sorts, of which *Elwesii* may be mentioned especially. Others are *Imperati*, *robustus*, and *Whittali*, the last named having unusually large blooms.

Hemerocallis (Day Lily). This is not a true bulbous plant, but its roots are thick and fleshy, and it may be well included in a series of this kind. The Day Lily is a most useful plant for the small garden, for it will thrive on a shady border or in the sunshine, and if its individual blossoms are short-lived, the display is maintained throughout a long period. The roots are hardy, and thrive in ordinary, well-dug soil; they dislike being disturbed, and only when well established produce a really fine display. October is the month in which to plant. There are several sorts, the finest of which are *aurantiaca major*, apricot; *Dumortieri*, orange yellow; *flava*, yellow; and *fulva*, brownish yellow. The chief flowering period is late May and June, though the first- and last-named kinds are rather later.

Hyacinthus (Hyacinth). Though the Hyacinth is somewhat stiff and formal in appearance, its brilliant variety of colouring and its fragrance render it a general favourite. October is the month in which to plant the bulbs, and they should be covered with from 2 to 3 inches of soil. Fairly light land is most suitable, though they will thrive in ordinary ground that is well cultivated. When planting on heavy ground it is advisable to put a handful of sand beneath and around the bulbs. The largest bulbs are not necessarily the best; a small, heavy bulb often gives

better results than a large, light one. In arranging for a spring display in beds it is necessary to plant fresh bulbs every autumn, but those planted in borders and in odd corners may be left undisturbed from year to year; the flower spikes in succeeding seasons will not be so fine as those from fresh bulbs, nevertheless they make quite a good show, and the bulbs continue to increase.

Florists' catalogues contain innumerable varieties in many colours, and the following form a good selection:—Single: *Alba maxima*, white; *Grandeur à Merveille*, blush; *Yellow-hammer*, yellow; *Moreno*, pink; *General Pelissier*, crimson; *Grand Maître*, blue; *King of the Blues*, dark blue. Double: *Koh-i-Noor*, reddish; *La Tour d'Auvergne*, white; and *Cloth of Gold*, yellow. The popularity of the varieties of the florists' Hyacinth has overshadowed the merits of a charming little kind called *amethystinus*; this grows only 6 inches high, and bears spikes of blue flowers in May. It is an admirable little flower for the rock garden or for growing in pots.

Iris. There are some exquisite flowers among the bulbous Irises, and probably none are more widely planted than the Spanish and English kinds, which bloom respectively in June and July. The former reach a height of about 18 to 24 inches, and the flowers are chiefly of shades of yellow, blue and cream. The latter grow about 2½ feet high, and the blossoms are of mauve or purplish tints or white marked with these colours. Both kinds are planted in October, the bulbs of the Spanish being covered

with 2 inches of soil and the English with about 3 inches of soil.

The small, early-flowering bulbous Irises are charming flowers, and probably only the fact that the bulbs are rather expensive has prevented their being more generally grown by amateurs. They thrive best on a warm, sheltered border of rather sandy, well-drained soil, and should be planted in August or early September, the bulbs being covered with about 2 inches of soil. The best are *reticulata*, with purple-blue, fragrant flowers; *persica*, blue, white and yellow; *Danfordiæ*, yellow; and *Krelagei*, purple. Other delightful kinds worth bringing to the notice of the amateur are *alata* (*Scorpion Iris*), purple, which blooms in winter; *Histrio*, pale blue and yellow; *tuberosa* (*Snake's Head Iris*), green and blackish; and two May-flowering kinds: *pavonia* (*Peacock Iris*), white and shades of blue, and *tingitana*, blue and yellow.

The brilliant Japanese Irises (*lævigata* or *Kämpferi*) and the Algerian Iris (*unguicularis*), though not bulbous kinds, may well be included in this note. The former make a wonderful display in summer, their large flat blooms showing the most gorgeous colours; they need deep, loamy soil and plenty of moisture; in fact, they are ideal waterside plants. The Algerian Iris blooms in winter and spring, a season at which its light blue, fragrant flowers are most welcome; it needs to be planted in well-drained, sandy soil on a sheltered border, and in inclement weather it is worth while to protect the blossoms by means of a hand-light.

Ixia. Although most generally



Delphinium, the king of blue summer flowers, massed in a border near the house.



Trees, especially those of slender or pyramidal growth, are attractive by the waterside.
Poplar, Cupressus and Blue Spruce are seen.



The blush-coloured Rose named Dr. Van Fleet trained to cover a house wall.



The fascinating blue Poppy, *Meconopsis betonicifolia*, one of the loveliest of all summer flowers. The plants thrive in partial shade in leafy soil.

suitable for cultivation in flower-pots, the *Ixia* is hardy in southern gardens if growing on a warm and sheltered border in well-drained soil. The bulbs should be planted in September or early October, about 3 inches deep, and it is wise to place a heap of ashes over them as a protection against severe frosts. The flowers show great variety of colouring, and a collection of mixed bulbs should be obtained. The Green *Ixia* (*viridiflora*) is one of the most attractive.

Leucojum (Snowflake). The drooping, white, green-tipped blossoms of the spring Snowflake are far too rarely seen in small gardens, and a few clumps would add a fresh interest to the rockery and border in early April. It is quite easily grown if planted about 2 inches deep in September or early October in a partially shady spot in fairly light soil. The summer Snowflake (*æstivum*) grows considerably taller, and bears rather small white flowers on a stem 18 inches high in May; the bulbs are planted as advised for those of the spring Snowflake. One variety (*autumnale*) blooms in early autumn, and is referred to in the notes on "Bulbs to Plant in Spring."

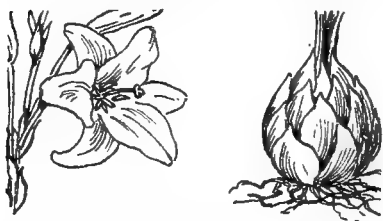
Lilium (Lily). Among the numerous Lilies are to be found the finest of all true bulbs, and no garden is worthy of the name that lacks a few at least of the best kinds. Lilies may conveniently be divided into two classes, those that are easy to grow, and others which, if not really difficult to grow, need more than usual care.

Easily Grown Lilies. Let us first consider those that can be grown by the average amateur. Most

popular of all is the Golden-rayed Lily of Japan (*auratum*), which in August bears large white flowers shaded with yellow and marked with purple. There are several varieties, the best of which are *platyphyllum*, large and handsomely spotted; *rubro-vittatum*, with reddish band down the centre of each petal; and *Wittei*, which is white and unspotted. The bulbs, which are preferably planted in autumn, though this work may be done in spring, should be covered with 4 or 5 inches of soil; they thrive best among shrubs, where the young stems obtain partial shade and shelter, and need a compost of loam, leaf-mould and sand. Ordinary soil may be rendered suitable by mixing in some peat or leaf-mould and sand. *Lilium auratum* is not usually long-lived. The Japanese Lily (*speciosum*), having pale blooms spotted with crimson, in late summer, is a more satisfactory kind, for it will re-appear each season and soon develop into a fine clump if planted in well-drained, loamy soil with which a little sand has been mixed. It is not fastidious as to position, but is grateful for a little shade. The finest varieties of this are *Krætzerei*, white; *roseum*, pink spotted; and *Melpomene*, a fine flower, heavily marked with carmine crimson. *Lilium Brownii* is a vigorous and tall kind, bearing large blooms, which are creamy white within and shaded with chocolate colour without. This Lily is hardy, and not at all difficult if planted in autumn in a compost of loam, peat, and sand, the bulbs being covered with 5 inches of soil, providing the border is thoroughly well drained.

If this precaution is neglected success cannot be hoped for. *Lilium Brownii* is excellent for pots.

The Nankeen Lily (*testaceum*) grows about 5 feet high, and bears nankeen-yellow flowers in June; it should be planted in September in ordinary, well-drained soil, the bulbs being covered with 4 inches of soil. The Cottage or Madonna Lily (*candidum*) is a great favourite, and its profusion of white blossom makes a delightful show in June. It is necessary to plant this kind in August at such a depth that there are 3 or 4 inches of soil above the bulbs. The Martagon Lily (*Martagon*), with purplish flowers; Hanson's Lily (*Hansonii*),



The white Madonna Lily, *Lilium candidum*,

yellow with brown spots; the Orange Lily (*croceum*), having cup-shaped, orange yellow blooms; the Scarlet Turk's Cap Lily (*chalcedonicum*), with flowers of brilliant red; the Pyrenean Lily (*pyrenaica*), greenish yellow; the Tiger Lily (*tigrinum*), orange with black spots; regale, white with yellow shading; and umbellatum, orange red, are all easily grown in ordinary well-tilled border soil. It is, however, an advantage to mix some leaf-mould with the ground, and to scatter sand freely beneath and around the bulbs. Plant in early autumn or in spring.

Among other Lilies suitable for the amateur who delights in fine

flowers and is prepared to take the necessary trouble to grow them the following deserve mention. The giant Himalayan Lily (*giganteum*) grows 8 feet or more high and bears greenish white tube-shaped flowers on a vigorous stem; the bulbs must be planted in a compost of loam, peat, and sand, and covered with 6 inches of soil. A sheltered and somewhat shady place should be chosen. If small bulbs are put in they will not bloom for several years, and having blossomed they die. It is easy, however, to increase the stock by means of offsets. The Swamp Lily (*canadense*), reddish yellow, about 3 feet high, needs a peat or leaf soil and partial shade; so, too, do the handsome Panther Lily (*pardalinum*), having orange-coloured blooms on stems 5 feet high, and *Lilium superbum*, which is somewhat similar. *Lilium Henryi*, a vigorous kind, bearing orange-coloured blooms on tall stems, should be planted among shrubs in loam, peat, and sand. *Lilium szovitzianum* is a vigorous and handsome Lily having yellow flowers spotted with brown.

Montbretia (Tritonia). This is one of the showiest flowers of late summer, and its cultivation offers no difficulties. The roots are hardy, and may be left undisturbed for several years, until, in fact, they become crowded. Professional gardeners often lift the roots in autumn, store them safe from frost during winter, and replant in March, and this is no doubt the method that ensures the finest blooms; it is, however, not necessary, except perhaps in cold districts and in heavy, clayey ground. Montbretias thrive best in

deep, well-drained loamy soil ; in that which is poor and becomes parched during summer they are not a success. The roots should be covered with 2 or 3 inches of soil and be placed about 6 inches apart. The old kind, *crocsmiæflora*, is still widely grown, though it does not compare for fine bloom with some of the modern varieties, such as Westwick, George Davison, Prometheus, and others. The flowers of all except one are of some shade of orange yellow ; the exception is rosea, a charming kind with rose-coloured blooms.

Muscari (Grape Hyacinth). This is one of the daintiest of spring bulbs ; the rich blue, drooping flowers clustering closely on their 6 or 8 inch high stems make a delightful show in March and early April. The bulbs will thrive in almost any position, are not fastidious as to soil, and should be grouped freely to make a good show ; they are covered with 2 inches of soil. October is the month in which to plant. There are several kinds with blue flowers, e.g. *conicum*, *azureum*, *botryoides*, etc. ; a variety of the first named, called Heavenly Blue, is considered to be the finest. The Ostrich Feather Hyacinth (*comosum monstrosum*) is a curious kind, distinguished by plume-like spikes of mauve blossom.

Narcissus (Daffodil). During recent years the *Narcissus* has developed in an extraordinary fashion ; florists have raised so many new varieties by cross-breeding that new divisions have been formed in which to classify them. Some of the new sorts are listed at fabulous prices : as much as fifty guineas has been asked for a single

bulb. However, there are still plenty of lovely Daffodils so cheap that everyone may buy them in sufficient quantity to make the garden gay in spring. The bulbs of all the larger-flowered sorts ought to be planted by the middle, or at latest the end, of October ; while if they can be put in during September so much the better. The ground ought first to be well dug, bonemeal, wood ashes, and soot being mixed in about 12 inches below the surface ; the bulbs should be at such a depth that they are covered by 3 inches of soil.

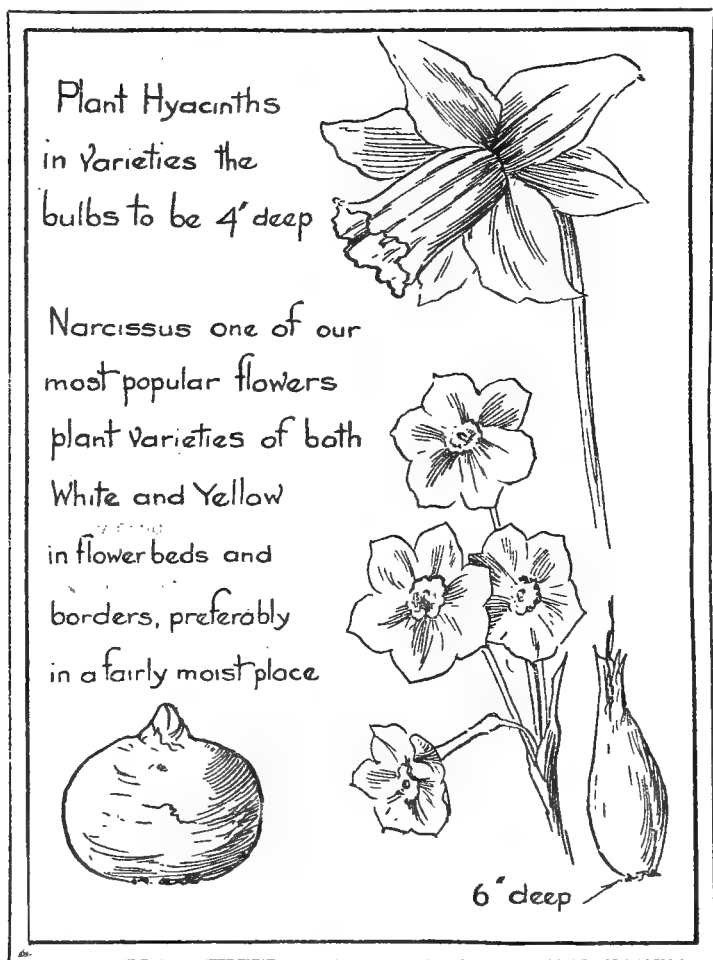
There are some very delightful flowers among the smaller *Narcissi*, such, for example, as *cyclamineus* (*cyclamen*-flowered), with narrow yellow blooms having recurving perianth segments ; *Bulbocodium* (Hoop Petticoat Daffodil), with a quaint, wide yellow trumpet ; *triandrus albus* (Angel's Tears Daffodil), with very beautiful drooping cream-white flowers in small clusters ; minor and *minus*, two very small yellow kinds ; and *Johnstoni* Queen of Spain, a beautiful soft yellow Daffodil with long, narrow trumpet and reflexing petals. These need more careful treatment than the larger kinds, and it is usual to plant them in the rock garden or to grow them in pots for the cold greenhouse. Out of doors they need well-drained loamy soil and a somewhat sheltered spot, and the bulbs should be planted in September.

The large-flowered kinds of *Narcissus* are classified in several divisions according to the respective length of the cup and perianth. In the trumpet section the trumpet is longer than, or as long as, the perianth ; in the chalice-cupped, or

incomparabilis, kinds the trumpet or cup is not less than one-third as long as the perianth, though not its equal in length; the Barrii or Star Narcissi have a cup which is

(poeticus), in which the white flowers have a flat central disc or crown.

Trumpet Daffodils. There are three kinds of trumpet Daffodils,



less than one-third the length of the perianth; the Leedsii Narcissi include the Barrii and incomparabilis, of which the flowers are white or creamy white; Poet's Narcissus

white, yellow, and bicolor. Good yellow sorts are King Alfred, Emperor, Glory of Leyden, Lord Roberts, P. R. Barr, Van Waveren's Giant, and Maximus; of

white trumpets Peter Barr, Madame de Graaff, Albicans, and Loveliness are good ; while from the bicolors (those having pale perianth and yellow trumpet) one may choose Empress, Duke of Bedford, Victoria, Horsfieldi, Mrs. Walter Ware, and Weardale Perfection.

Chalice-cupped Narcissi. There are some delightful flowers in the chalice-cupped section, such, for example, as C. J. Backhouse, Gloria Mundi, Sir Watkin, Stella superba, Autocrat, and Frank Miles.

Star Narcissi. The Star or Barrii Narcissi also contain some lovely flowers, e.g. Barrii conspicuus, Seagull, John Bain, Flora Wilson, Beacon, and Crown Prince.

Leedsii Narcissi. Here one should choose Mrs. Langtry, Katherine Spurrell, Minnie Hume, Waterwitch, Ariadne, and Elaine.

Poet's Narcissi. Many beautiful sorts have been added to the Poet's Narcissus section within recent years, and a selection should include the following: poeticus, poeticus poetarum, Epic, Homer, Cassandra, and Virgil.

Of other sections that ought to be mentioned are the Engleheartii Narcissi, which are distinguished by pale perianth and large, flat central crown of brilliant colouring. They are, however, now classed with the chalice-cupped varieties. Everyone likes to grow the Jonquil for the sake of its sweet-scented blossoms ; in addition to the ordinary single kind there are the Campanelle and odorus rugulosus, all bearing fragrant yellow flowers in a cluster.

The double Daffodils are no great favourites of mine, though some like the large, somewhat untidy blooms

of Butter and Eggs, Codlins and Cream, and others.

The bunch-flowered Narcissi (varieties of Narcissus Tazetta) are very popular for growing in pots and fancy bowls, but they are useful also for planting out of doors. A few of the best are Grand Monarque, white and pale yellow ; Grand Soleil d'Or, white and orange ; and the Paper White, so largely used for forcing in pots to blossom at Christmas and early in the new year.

A new and closely related group that well deserves the attention of amateurs is the result of cross-breeding between the Tazetta and the Poet's Narcissi : the varieties are known as Poetaz Narcissi. They bear numerous flowers in a handsome bunch, and may be grown in pots or planted out of doors. Two of the best are Elvira, white and orange yellow, and Jaune à Merveille, yellow with deep yellow cup.

Ornithogalum (Star of Bethlehem). This group of hardy bulbs is best known to the amateur by *Ornithogalum umbellatum*, commonly called the Star of Bethlehem, which grows about 16 inches high and bears bunches of white starry blossoms in spring. It is an accommodating plant, and thrives in ordinary soil, even in shade. A finer kind is *pyramidale*, 20 inches high, with attractive spikes of white bloom. Another deserving of mention is *nutans*, 12 inches high, with greenish-white flowers ; both these flower in spring. The bulbs of all these should be planted in October, about 3 inches deep in ordinary soil.

Oxalis (Wood Sorrel). Some of the Wood Sorrels have tuberous roots, and may therefore be said to

come within the scope of this section. They are low-growing plants with pretty, deeply-cut leaves, and flower in spring and early summer. The two most likely to appeal to the amateur are *adenophylla* and *enneaphylla*; both have beautiful leaves, the flowers of the former being pinkish and of the latter almost white. The roots should be planted about 2 inches deep in September, in the rock garden; a half-shady spot and a well-drained soil of half loam and half leaf-soil with sand freely mixed in are suitable. The Common British Wood Sorrel (*Oxalis acetosella*), though not tuberous-rooted, may be mentioned as a charming little flower for planting freely in odd corners of the garden, among shrubs, etc.

Puschkinia (Striped Squill). This is a low-growing spring-flowering bulb, of which the spikes do not rise higher than 6 or 7 inches; the blossoms are white marked with blue stripes. Plant in early autumn, from 2 to 3 inches deep in ordinary soil.

Ranunculus. There are various strains of the florist's *Ranunculus*, such, for example, as the Turban, French, Persian, Italian, etc., and they make a brilliant display in early summer if grouped freely in the garden. The roots should be planted in October in well-prepared and manured ground, being put at such a depth that they are covered with 2 inches of soil; they may also be planted in March—in fact, this practice is preferable on heavy ground or in cold districts. The claws of the tubers must be placed downwards. It is usual to lift the roots when the foliage has withered, and to store them until planting

time; but in suitable situations they may be left undisturbed for several years. Innumerable shades of colour are represented by the various strains of *Ranunculus*, of which the double Turban are perhaps the most generally useful. It is important not to let the plants suffer from drought in spring, as they are liable to do if a period of dry weather sets in; in fact, lack of attention in this direction accounts for many failures. The need for planting in deeply-dug ground is thus evident, for there the danger from drought is not so great.

Amateurs who are interested in the subject of growing flowers from seed will find much pleasure in attempting to raise various sorts of *Ranunculus* in this way. Even if the flowers are no improvement on those to be obtained by the orthodox method of planting roots, they will possess an additional fascination. Early spring, in February or March, is the time to begin: the seeds are sown thinly and slightly covered in a box of light, sandy soil placed in a frame. Coolness and moisture are needed to ensure successful germination. Leave the seedlings in the box until the leaves have withered, then store until planting time.

Sanguinaria canadensis (Blood-root). The popular name of Blood-root has reference to the coloured liquid contained in the thick roots. The flowers, which are somewhat cup-shaped, on stalks 5 or 6 inches high, are white, and appear in spring. This plant is usually grown in the rock garden, and should be planted in partial shade in ordinary soil.

Scilla (Squill). Few flowers make a brighter show in early spring

than the various Squills ; the bulbs are cheap, and all who value colour at the dawn of the garden year should plant these beautiful little blue flowers freely in patches in the rock garden, towards the front of the flower border, and in any odd corners where room can be found for them. The leaves die early, and so cause little trouble afterwards. The bulbs are planted in August and September, being covered with about 2 inches of soil ; they thrive in ordinary ground in sunshine or in partial shade. The chief favourite is *sibirica*, the Siberian Squill, which bears light blue blossoms in February and March. Equally early is the two-leaved Squill, *bifolia*, which has bright blue blooms. The Spanish Bluebell (*hispanica* or *campanulata*) is a handsome flower of April and May ; it grows 12 to 15 inches high, and, though the typical kind is blue, one may have pink, rose, and white varieties. Then there is, of course, the common Bluebell (*festalis* or *nutans*), which makes an exquisite display beneath trees, and might worthily be used for planting in odd places which now are bare.

But this short list by no means exhausts the selection of Squills available for the amateur's garden : though the remaining kinds are not at all common, they are none the less noteworthy. It is curious how conservative the average amateur is in the matter of choosing bulbs ; year after year he grows the same sorts, while a careful search through the pages of a good catalogue would reveal many fresh treasures. Everyone knows of the early, two-leaved Squill (*Scilla bifolia*), but how many have grown the variety with rose-coloured flowers, named *rosea*?

Then there is the Italian Squill (*Scilla italica*), which does not bloom until May, but even then its spikes of pale blue blossom are most welcome, for they have the saving grace of fragrance. And for those who care for Squills again in early autumn, there is the lilac-coloured *Scilla autumnalis*, to be planted in July.

Tulip. The Tulips need no pæan of praise ; they are brilliant beyond all other flowers of spring, and a careful selection of varieties provides a handsome display from early April until late in June. With-in recent years the May-flowering Tulips, which consist of Cottage and Darwin varieties, have become great favourites, and seem likely to supplant the dwarfer April-flowering sorts. However, the earliness of the latter will no doubt always tell in their favour. Some varieties of Darwin and Cottage Tulips are difficult to classify because of the cross-breeding that has taken place ; but the general characteristics of the two classes are as follow : The Darwins have a rounded, cup-shaped, somewhat shallow bloom which is often of self-colouring or of what are known as "art" shades. Cottage Tulips, on the other hand, have usually long, pointed flowers, often most brilliantly coloured.

The earlier Tulips ought to be planted in October, and the May-flowering kinds in November ; there should be not less than 3 inches of soil above the bulbs. It pays to prepare the ground well for Tulips by digging 18 or 20 inches deep, but it is not wise to use fresh manure. An ideal method is to plant Tulip bulbs on ground that was manured for a previous crop,

but it is not always that one is able to arrange for this. Bonemeal at the rate of a handful to the square yard is, however, a satisfactory manure for Tulips, and may be dug into the ground with advantage prior to planting.

Early Tulips. Among the best of April-blooming varieties are Artus, bright red ; Cottage Maid, rose and white ; Couleur Cardinal, crimson red ; Keizer's Kroon, red and yellow ; King of the Yellows ; La Reine, white with rose tinge ;

Snowdrop 4"



Tulip 3"-4"



Snowdrop and Tulip bulbs should be covered with 3 to 4 inches of soil.

Prince of Austria, reddish buff (fragrant) ; Rose Gris-de-Lin, rose and white ; Thomas Moore, orange buff and white ; Swan, white. Of the doubles, Blue Celeste, mauve purple ; Couronne d'Or, yellow ; Imperator rubrorum, red ; and Vurbaak, orange red, are very showy.

Darwin Tulips. A selection of Darwin Tulips ought to include Clara Butt, rose pink ; Europe, salmon red ; Harry Veitch, red ; Lantern, pale lilac ; La Tulipe Noire, very dark ; Margaret, blush pink ; Pride of Haarlem, rose red ; and Rev. H. Ewbank, pale mauve.

Cottage Tulips. Of these one ought to have Bouton d'Or, yellow ;

Ellen Willmott, yellow ; Inglescombe Pink ; La Merveille, orange salmon ; Mrs. Moon, yellow ; Picotee, white with rose edge ; Primrose Beauty, pale yellow ; and The Fawn, blush.

Then there are, of course, the Parrot Tulips, with their brilliantly coloured, notched, and somewhat untidy petals, several varieties of which are obtainable.

Among the species or true wild Tulips there are some lovely flowers, and amateurs should endeavour to grow a few of the best, such, for example, as Billietiana, yellow ; Didieri alba, cream-white ; Fosteriana, scarlet, very large ; Greigii, orange red ; Kaufmanniana, red and white ; and retroflexa, pale yellow. The Lady Tulip (*clusiana*) is a charming little flower in white and rose, too dainty for the border, and best in pots or in the rock garden. The wild sweet-scented Tulip (*sylvestris*) is also worthy of inclusion in an amateur's collection.

The cultivation of the Old English or Florist's Tulips is now confined to a few fanciers, and they find no place in the average garden. One may still see the best of them at the annual exhibitions of the National Tulip Society held in London and the provinces. There are various sections of Florist's Tulips, the classification being according to colour and marking. Breeder Tulips are those of self-colours, raised from seed ; subsequently, however, the colour becomes "broken," and the varieties are arranged in the subsections of bizarre, rose, and bybloemen, each of which is further subdivided according to whether the markings are flamed or feathered.

CHAPTER 15

Bulbs and Roots to Plant in Spring and Summer

A **MARYLLIS BELLADONNA** (*Belladonna Lily*) is the finest of all the late summer and autumn-flowering bulbs; the pink, somewhat tube-shaped blossoms appear on strong stems some 18 inches or more high, in September, and coming, as they do, when most flowers are fading, they are especially welcome. Although popularly known as the *Belladonna Lily*, this flower bears no relation to the true Lilies, and is, as its botanical name shows, an *Amaryllis*. Although somewhat special treatment is necessary to grow this bulb really well, it is not such as cannot be given in most gardens, even those of restricted area. A little border at the foot of a sunny greenhouse or wall suits it admirably, and provides just such protection and shelter as are required. The border must be well drained, and if the soil is heavy it is worth while removing it to the depth of about 18 inches; a few broken bricks are then placed in the bottom of the hole or trench for drainage, and the space is filled with turfy soil with which a little bonemeal and sand are mixed.

It is necessary to put the bulbs at such a depth that they are covered with 5 or 6 inches of soil, and to leave them alone from year to year, for there is nothing the *Belladonna*,

in common with many other plants, dislikes so much as being disturbed. The bulbs ought to be quite 10 or 12 inches apart. June or July is the month to plant. Such a border as has been described is liable to get dry in early spring, for it does not derive much benefit from rainfall, a great deal of which is kept off by the wall or greenhouse; as the leaves develop at that season it is essential that the soil be kept moist, so watering may be necessary occasionally. The ordinary *Amaryllis Belladonna*, which has rose-pink flowers, is excelled by the variety *Kewensis*, which is of more vigorous growth and bears more blooms in each bunch.

Begonia. Providing one stores the tubers safe from frost and starts them into growth in the greenhouse in February or March, hardening them off gradually, and planting out of doors in June, there is not very much to add to what is written in the chapter on "Bulbs for the Greenhouse." Tuberous *Begonias* dislike heat and drought, and if planted where there is a little shade during part of the day the display is likely to be finer and to last longer than if the plants are put out in full sunshine. A fairly light, deep soil suits them best, one in which leaf-soil and sand have been dug freely. There are many named varieties of

Tuberous Begonia, but for bedding-out purposes unnamed sorts, classified according to their colours only, are recommended. The roots should be taken up in October, and after having been laid out to dry for a week or so in the greenhouse, they are cleaned and stored either in bags or pots of sand, out of reach of frost. If stored in pots or boxes of sand it is possible to keep them safely through the winter in an unheated greenhouse.

Colchicum (Meadow Saffron).

These autumn-flowering bulbs deserve greater attention than they receive from amateurs. They come into bloom during autumn and help to diminish the gulf that exists between the flowers of the old and those of the new year. The crocus-like blossoms come before the leaves, and to prevent their being spoilt by soil splashed up in wet weather it is advisable to plant them in short grass or among such a low-growing evergreen as mossy Saxifrage. The bulbs are put in the ground in July or August, and are covered with about 3 inches of soil; this need not be of special quality, but ought not to be clayey. Sand may be used freely beneath and around the bulbs at planting time. The leaves of Colchicum are unusually large, and make their appearance in the new year. The commonest kind is autumnale with rosy-mauve flowers, but the most handsome is speciosum, of which the fine blossoms are rose purple.

Crocus. There are several Crocuses that blossom in autumn and winter in addition to the favourite spring kinds which are so freely grown. The best of those that open in autumn are asturicus, pale mauve; pulchellus, lavender;

sativus, purplish; and speciosus, lavender blue. Winter-flowering kinds are biflorus, white and lilac; chrysanthus, yellow; Imperati, violet and other shades; and Sieberi, lavender. Similar care in choosing suitable positions for their planting should be taken as advised in the case of Colchicum, otherwise the flowers will be spoilt in wet weather. Perhaps the best way of growing the winter Crocuses is in flower-pots or pans in a frame or cold greenhouse; then the exquisite blossoms may be enjoyed in their fullest beauty. Planting or potting is carried out in July and August, the bulbs being covered with 2 inches of soil out of doors and about an inch or less in pots.

Cyclamen. The hardy Cyclamens are charming little plants, and those that bloom in autumn are no less welcome than others opening in spring. Two of the chief autumn kinds are europæum, having reddish purple blooms in August and September, and prettily marked leaves at the same time; and neapolitanum, of which the rose-pink flowers appear a little later, and the pretty foliage develops after the blossoms have faded. The roots should be planted in June or July in loam, leaf-soil, and sand, with which brick rubble is mixed; a covering of about $\frac{1}{2}$ inch of soil is sufficient.

Dahlia. Having been stored safe from frost during winter, preferably in boxes of fibre or sand kept dry, the roots of the Dahlia are put in pots of light soil in February or March, and if kept moist soon make fresh growth. The shoots may be taken off as cuttings to increase one's stock if necessary, or the clumps of tubers can be

divided. Further, one may dispense with greenhouse treatment in spring and plant the old roots out of doors about the middle of May or rather earlier; so treated, they are not likely to produce such fine blooms as young plants raised from cuttings, but they will yield an abundance of blossom. Dahlia cuttings root without difficulty in pots of sandy soil in the greenhouse if covered with a hand-light or placed inside a case. When rooted, each one is potted in a small flower-pot, and subsequently into the 5-inch size; after being properly "hardened off" in a frame during May the Dahlias will be ready for planting early in June. Deeply-dug soil is essential, though it ought not to be made too rich; however, a little bonemeal, wood ashes, and decayed manure do good.

Staking is an item of importance, and must be attended to in good time, otherwise the plants become misshapen and rendered unattractive. One stout stake is sufficient providing the shoots are carefully secured to it with strong string, though a few other lighter ones are useful. High winds and heavy rain often play sad havoc among badly staked Dahlias. Dahlias make rapid progress, and some thinning of the shoots is advisable.

In autumn, when frost has spoilt them, the stems are cut down to within about 6 inches of the ground, the roots being then lifted, dried, and stored safe from frost for the winter.

The varieties of Dahlias are innumerable, and one might easily fill a book with them. Every year sees the advent of dozens more. Some Dahlias are far more useful in

the garden than others, and those who grow only for display and not for exhibition should make careful choice.

Pæony-flowered Dahlias are tall, vigorous kinds, but their large, loose, semi-double blooms are very handsome in the garden. A few good varieties are Mafeking, rosy fawn; Primrose Queen, yellow; Queen Wilhelmina, white; Sunset, red and yellow.

Collarette Dahlias have become popular, and have proved excellent for the garden. They are so called because the blooms possess an inner ring of small petals, which gives them a curious and bizarre appearance, especially as this "collar" is of distinct colouring from the ordinary petals. A few excellent sorts are Ami Cochet, red, with yellow collar; Henri Farman, red, with pale collar; Maurice Rivoire, crimson, with white collar; Negro, dark, with white collar; and Princess Louise, crimson, with white collar.

Decorative Dahlias are a somewhat indefinite class, but among them are found excellent garden varieties. Of the giant decorative sorts, which grow 6 feet high and bear very large double blooms, the best are Jeanne Charmet, lilac pink; Mlle. H. Charmet, white; and Souvenir de Gustave Douzon, red. Varieties of dwarfer growth, 3 to 4 feet, and remarkably free blooming, are K. A. Victoria, white, very fine; Porthos, mauve; Orange Boven, orange buff; Delice, pink; Brentwood Yellow, Crimson Flag and Dobbie's Bedder.

Cactus Dahlias suitable for the garden are Amos Perry, crimson; Harold Peerman, yellow; Mauve Queen, pale mauve; Nellie Riding,

crimson and white; Sweet Brier, pink; and White Ensign, white.

Double or Show Dahlias make a fine display in the garden, but the bushes take up a good deal of room. A few suitable sorts are Arthur Rawlings, crimson; Mrs. Gladstone, pink; John Walker, white; Keynes' A 1, yellow; and Tom Jones, pale yellow and rose.

Pompon Dahlias are like miniature blooms of the Show varieties, and very charming flowers they are in the garden. Some lovely shades are represented among modern varieties, a few of the best being Adelaide, blush and lavender; Bacchus, red; Emily Hopper, yellow; Little Donald, crimson; Nerissa, silvery rose; and Tommy Keith, red with white tips.

Single Dahlias are unsurpassed for garden decoration; they blossom most freely of all. A few charming sorts are Columbine, rose; Cardinal, red; Kitty, rose mauve; Miss Roberts, yellow; and Snowdrop, white.

Other favourite classes are the Star Dahlias and the Charm or Miniature-Pæony-flowered. Coral Star, Crimson Star, and Crawley Star are good varieties of the former class. Of the Charm Dahlias beautiful sorts are Our Annie, Rosie, Trixie, Lovely, Dazzle, Lucifer, and Olivia.

Salvia patens. This beautiful blue Salvia has tuberous roots which are not hardy, and must therefore be lifted in autumn and stored safe from frost during winter. Like the Dahlia, they are started into growth in the greenhouse in spring, may similarly be raised from cuttings, and are hardened off in May for planting out of doors in June. The flowering season is late

summer. This beautiful plant thrives best in rather light, well-cultivated ground, and should not be planted in heavy soil.

Sternbergia lutea (Lily of the Field). This bulb bears yellow, somewhat crocus-like flowers in September, and is planted in July, about 3 inches deep. It thrives in ordinary, well-drained soil. A showy April-flowering kind, of which the bulbs are planted in September or October, is Fischeriana, also with yellow blooms.

Galtonia candicans (Cape Hyacinth). By the month of August hardy flower borders have lost much of their freshness and a good deal of their brilliance, so that it is useful to know what may be planted with a view to a flower display throughout the dog days. The Cape Hyacinth, Galtonia (or Hyacinthus) candicans, is one that has special value for this purpose, for it is in full beauty in August. It forms quite a loose rosette of rather large leaves, and produces a strong stem some 3 to 4 feet high, the upper part of which is covered with drooping, bell-like white flowers. The bulbs may be planted in groups among shrubs, in the hardy flower border, high up in the rockery garden, or in a bed filled with such early summer flowers as Pæony, Oriental Poppy, or Lupin, there to continue the display. They should be placed 5 inches deep and some 8 or 10 inches apart. Ordinary soil is suitable, provided it is well prepared by digging. The Cape Hyacinth is not thoroughly hardy in cold, heavy soil, and it is wise to lift the bulbs in autumn when the leaves have turned yellow and store them in some frost-proof place for the winter. In warm soil, however,

they may be allowed to remain undisturbed, especially if the soil above them is covered with a heap of ashes. March is the month in which to plant or replant (supposing the bulbs to be lifted annually).

Gladiolus (Sword Lily). This handsome flower is particularly useful, for it brings gaiety to the garden when many hardy flowers are losing their beauty, from early August onwards. It is an excellent practice to put bulbs of Gladioli among beds of Rhododendron, Azalea, Pæony, and others that bloom in early summer, for thus one is able to look forward to a second harvest of blossom when otherwise there would have been nothing but leaves to show during the months of late summer. Space might also well be left here and there in the mixed border (and especially near the early flowers) in which to plant Gladioli, for they will ensure a late summer show and serve to fill a blank. The best time to plant is late in March and early in April; the ground must be prepared beforehand by digging, and it is an advantage to mix in bonemeal and wood ashes about 12 inches below the surface. The bulbs are put at such a depth that there is 3 inches of soil above them, and they should be 9 or 10 inches apart. Many varieties need staking, and if support is thought necessary it should be given before the flower spike gets long, so as to ensure its being kept straight. The application of liquid manure in July will ensure much finer blooms than would be produced without its aid. The bulbs must be lifted in October and placed in a shed to dry; in a week or two it will be possible easily to remove the leaves, when the

bulbs should be taken up and stored in paper bags.

One of the most useful of Gladioli is the old scarlet-flowered *brenchleyensis*; it is strong-stemmed, not needing to be staked, and rarely fails to give satisfaction. Many beautiful varieties have been raised



The Gladiolus or Sword Flower.

during recent years, representing several classes, the chief of which are described in the following notes.

Those belonging to the *gandavensis* group produce a vigorous spike with numerous flowers, closely set, and as most of these are open together a good display results. Seedlings or unnamed varieties are recommended, for they produce flowers of attractive and brilliant colouring.

The flowers of the *Butterfly* or *Lemoinei* Gladioli (raised by M. Lemoine, of Nancy) are often marked with handsome blotches, from which character the popular

name is derived. Although the individual flowers are very showy, they do not as a rule open together, and are not so closely set upon the spike as in those of the *gandavensis* group. However, they comprise several exquisite varieties of mauve or bluish shade.

Large and particularly handsome flowers are characteristic of the *Nanceianus Gladioli* and of those of the *Childsii* group. There are named varieties of each; but the amateur is likely to derive as much satisfaction from unnamed seedling bulbs, which, moreover, are much cheaper.

Gladiolus primulinus, with pale yellow blooms, has given rise to a new group known as *primulinus* hybrids. Most have medium-sized, hooded flowers. The range of colour is remarkable; rose, orange, apricot and other rich colours are represented.

The early-flowered kinds, which open in June, have been raised from *Gladiolus Colvillei*, which itself has reddish purple blooms on somewhat slender stems. It is, however, surpassed in beauty by the white variety, *The Bride*, and the rose-coloured one named *roseus*. These early sorts are very popular for growing in flower-pots for the greenhouse, but they may be planted out of doors on a sheltered border in autumn; the soil must be well drained, and protection from frost should be given by placing ashes or some other material on the surface; place the bulbs 3 or 4 inches deep.

Iris. There is a tale told among amateur gardeners that if you plant *Iris* bulbs later than October they will not bloom the following year. It is, however, without foundation,

for I have often planted Spanish and English *Irises* in early spring and had quite a fair display from them in June and July. However, October is the proper time to put them in the ground, and they are included in this chapter so that opportunity may be taken to point out that while autumn planting is far preferable, and gives the best results, the work may be carried out in early spring not later than February. Further particulars are given in the chapter on "*Bulbs to Plant in Autumn.*"

Leucojum (Snowflake). The spring and summer *Snowflakes* are planted in autumn, and reference has already been made to them. One kind (*autumnale*), however, does not bloom until autumn, and the bulbs are planted in March; it grows only 4 or 5 inches high and bears pink and white blossoms. A sheltered nook in the rock garden is the best place for this *Snowflake*, and ordinary light, loamy soil is suitable.

Lilium (Lily). Probably many more *Lilies* are planted by amateurs in spring than in autumn, and the work may well be done then, providing suitable sorts are chosen. It is, however, useless to plant in spring those kinds that bloom in early summer; they are bound to be unsatisfactory the first season. Such are referred to as *croceum*, *elegans*, *candidum*, *bulbiferum*, *chalcedonicum*, *Hansonii*, and others. For particulars of these and others that are best planted in autumn the reader should turn to the chapter on "*Bulbs to Plant in Autumn.*" The chief kinds that may be planted in spring (February and March) are *auratum* and its varieties, *speciosum* and its varieties, *tigrinum*

and its varieties, *giganteum*, *canadense*, and *pardalinum*, though all may with advantage be put in as soon as obtainable in autumn. Such details as to planting, etc., that have already been given should be followed.

Montbretia (Tritonia). In those gardens in which Montbretia roots are lifted each autumn the time chosen for replanting is late February and early March, and this also is the season at which to make a start by purchasing the roots. As has been pointed out already, it is not essential to lift them each autumn, at any rate in gardens in the southern part of the kingdom, though in the colder counties it is advisable to do so. In any case, finer flowers are obtained by lifting the roots in autumn, grading and storing them, and replanting, keeping the respective sizes together, in spring.

Schizostylis coccinea (Kaffir Lily). This is a vigorous plant, 2 to 3 feet high, with iris-like leaves and bearing spikes of bright red flowers in late autumn, even in mild weather until Christmas. The roots are not thoroughly hardy, and for this reason a warm, sheltered border should be chosen for their accommodation, such, for example, as one at the foot of a sunny wall or greenhouse. A suitable soil consists of loam, leaf-soil, and sand, with some drainage beneath if necessary. Planting is carried out in spring, and every

three or four years it becomes necessary to divide the clumps.

Tigridia (Tiger Flower). This is one of the showiest of all bulbs, and the brilliantly spotted flowers, though short-lived individually, never fail to compel admiration. Unfortunately, more than ordinary care is necessary to ensure success in its cultivation, a circumstance that no doubt accounts for its comparative rarity in amateurs' gardens. A warm, sunny border is required, and the soil must be well drained and consist of loam with which leaf-soil and sand are freely mixed. The time to plant is late March or early April, the bulbs being covered with 2 inches of soil. In all except the warmest gardens they must be lifted in autumn and stored for the winter. The common Tiger flower is *Pavonia*, of which there are several varieties, all of gorgeous colouring, e.g. *grandiflora*, shades of red and yellow; *conchiflora*, yellow and scarlet; *aurea*, yellow and reddish brown.

Zephyranthes (Zephyr Flower). This is a flower uncommonly seen outside botanic gardens, yet it has merits such as should commend it to everyone. The hardiest kind is *candida*, which is of low growth, evergreen, bears white, somewhat crocus-like blossoms in August and September, and makes an admirable edging to a border alongside a gravel path. March is the time to plant, and the bulbs should be covered with about 2 inches of soil.

CHAPTER 16

All About the Clematis

IN a garden of moderate size it is possible by making a careful selection to have Clematis in bloom during the greater part of the year. Those flowering from October to early June should be pruned after flowering, to encourage the development of free growth from midsummer onwards, as it is from these shoots that the cultivator must look for his blooms the following year. Clematis which flower in summer and autumn must be pruned between November and early spring, before new growth commences. We defer most of the pruning until February, for the thin twiggy shoots provide a little protection to the stems in winter.

Large-flowered Varieties. To the Lanuginosa group belong most of the large-flowered summer and autumn blooming varieties. They are of free growth, producing the flowers successionally on short lateral summer shoots that grow on branches that developed the previous year. Cut out the thin and crowded twigs between November and early March. Tie in carefully the branches from which the flowering shoots develop. Some of the best sorts are Alba Magna, pure white; Beauty of Worcester, bluish violet, white stamens; Blue Gem, pale sky blue; Henryi, creamy white; Lady Northcliffe, deep lavender, tinted blue, one of the

most beautiful varieties; Lord Neville, dark plum colour; Marcel Moser, mauve violet, red bars; Nelly Moser, light mauve, red bars. These provide a succession of flowers from the end of June until October.

The Jackmanii varieties flower in summer and early autumn on the new shoots of the current year's growth. In early spring the previous year's shoots should be cut down to within 12 inches of the base. The main object in pruning this group is to encourage the development of vigorous new shoots on which the flowers develop. In addition to the Clematis Jackmanii, violet purple, the following should be grown: Comtesse de Bouchard, rose; Gipsy Queen, purple; Madame Edouard André, red; Mrs. Cholmondeley, light blue; and Snow-White Jackmanii.

Varieties of the Azurae or Patens group produce large flowers from the old or ripened wood during May and June, or early July. All the pruning that can be done is to remove the weak, straggling twigs, and thin out overcrowded branches after flowering. Good sorts are Lasurstern, deep purplish blue; Miss Bateman, white, chocolate anthers; Mrs. George Jackman, cream white; and The Queen, lavender.

To the Floridae group belong the large double-flowered, summer-blooming Clematis, delightful on fences and arbours during June and July. They flower from the old or ripened wood of the previous year, so cut out weak and overcrowded shoots after flowering. Belle of Woking, silvery grey ; Duchess of Edinburgh, pure white, deliciously perfumed ; and Lucie Lemoine, a free-growing double white, are excellent sorts.

The blooms of the Viticella group are not so large as some, but the plants flower in profusion from late June or July to October. Prune severely in winter or early spring, as the flowers are borne on the vigorous young shoots of the year. Cut down the plants to within about 2 feet of the ground. Distinct sorts are Kermesina, bright red ; Madame Grange, crimson violet ;

Ville de Lyon, carmine red ; Viticella alba luxuriens, white.

Vigorous Kinds of Clematis.

Among the species or wild types one of the best known is *C. montana*, the Indian Mountain Clematis, a strong-growing climber, with white, anemone-like flowers during May. Almost equally valuable is the variety *rubens*, with rosy red flowers. These climbers should be pruned in June when the flowers fall, as the following spring's blossoms develop from the young growths of the previous year. *C. Flammula* is the most fragrant of the family. During August and September masses of small white blossoms give off a perfume suggestive of almonds or vanilla. Prune the stems fairly hard back in early spring. This is one of the most useful sorts of Clematis for porches and arbours.

CHAPTER 17

Growing Flowers in Walls

IT is not suggested that the reader should go out of his way to build a wall in which to set flowering plants, but if he realises that certain kinds make a most enchanting show when draping a wall or rocky bank he will be able, when the opportunity occurs, to turn an apparently unpromising site into a garden of great charm. One of the full-page plates in this book shows how even an ordinary bank can be transformed into a wonderful little garden by planting it with *Aubrietia*, and that is only one of many kinds of plants that are seen at their best when their trailing shoots, ablaze with blossom in due season, fall over the face of a rocky slope or bank.

It is not a laborious task to make a little wall garden in association with the rockery, and a more attractive entrance to the latter could scarcely be imagined. The wall is built "dry"—that is to say, no mortar or cement is used; the joints are filled with soil in which the plants' roots may find the nourishment and moisture they need as they make their way to the bank of soil at the back of the wall.

If it is to display the trailing plants really well, the wall ought to be not less than 3 feet high, and it may be higher still with advantage. If it is, say, 3 feet high, an excavation about 18 inches wide

will be necessary in order to provide a sure foundation, and the front of the bank of soil must be dug away to that extent.

Large, flattish stones are best for the purpose; they should be from 12 inches to 18 inches in length for a wall up to 3 feet or so high. The shorter ones should be set with their longest sides parallel to the face of the bank, but some of the longer ones must be arranged in the opposite direction, at right angles to the bank; they will serve to make the wall firm and stable, to bind it securely to the bank of soil.

Making a Wall for Flowers. The stones must be so arranged that they slope towards the bank of soil just as was done in setting the rocks in the rock garden. If the back of each stone is lower than the front, the structure will obviously be firmer and more secure than if the front of the stone is lower than the back. Further, if the stones slope inwards rain will run down towards the roots of the plants instead of running off, as it would do if the stones sloped towards the front of the wall.

Each layer of stones should be so arranged that it is slightly further back than the layer beneath; thus, when the wall is finished it will slope gradually away from the base. Those are the chief points to bear in mind when building a wall for

flowers. Care, however, must be taken to give it as irregular an appearance as possible ; this can be done by choosing stones of various sizes, and especially by making use of a few large ones. Although the general slope of the wall must be towards the bank of soil, here and there a large stone may be allowed to overhang so as to give variety of outline.

A wall built of stones of the same size and presenting a flat and uniform surface is not nearly so attractive. Here and there a bold jutting rock or mass of rocks will add largely to the picturesqueness and naturalness of the wall garden. As the stones are laid care must be taken to fill between and at the back of them with soil.

When to Plant. A wall garden may be planted in September or early in April. An excellent way of establishing plants there is by sowing seeds ; these should be mixed with a little moist soil, and the mixture placed in the joints between the stones. If plants are used they must be small ones, for they become established much more quickly than large ones. As time goes on many self-sown seedlings will find a home on the wall ; weeds, too, will grow there, so that a good deal of weeding and thinning out will be required from time to time. Many an old garden wall could be beautified if holes were made here and there in the joints, the mortar being taken out and replaced with a mixture of soil and seeds.

Best Kind of Wall. The plants grow most luxuriantly when the wall is a retaining one—that is to say, when it is built against a bank of soil ; but even a wall in the open can be made very charming if holes

are made in the way described and filled with seeds and soil.

Flowers to Choose. Many flowering plants provide a fascinating show when grown in a dry wall. The *Aubrietia*, in its numerous gaily-coloured varieties, is one of the most delightful ; when established, its leafy shoots reach from top to bottom, and in spring furnish a really wonderful show of bloom. When the flowers have faded the shoots ought to be cut well back, otherwise the plants will become bare in places. The yellow *Alyssum saxatile* also looks well in a wall, and the evergreen *Candytuft*, *Iberis sempervirens*, is an ideal plant for this purpose ; in the course of a few years it will form large tufts 2 to 3 feet long, and as wide, and in April they are smothered in pure white blooms—so thickly are they covered that the leaves are hidden.

Arabis, Pink, and Snapdragon. The single white *Arabis* is better for the wall than the double variety so often used in flower-beds and on the edge of the rock garden. Some of the Pinks are glorious wall garden flowers, particularly the Cheddar Pink, *Dianthus caesius*, and those sold as mixed rock garden Pinks—chiefly varieties of *Dianthus plumarius* ; all these Pinks are easily raised from seeds sown in the wall in spring or late summer, or the seedlings may be raised from seeds in a box of soil and put in the wall when they are an inch or two high. Snapdragons are splendid wall plants, and look especially well on top of the wall.

Stonecrop and Houseleek. The loveliest blue flower for the wall is *Veronica rupestris* ; it is easily raised from cuttings in summer, and

when rooted these should be planted between the joints. Stonecrops and Houseleeks flourish with very little soil about their roots, and they are strongly to be recommended. Some of the easy silvery Saxifrages, such as Aizoon and its varieties, are suitable wall plants ; then there are the creeping Gypsophila repens, some of the Bellflowers, such as Campanula pusilla, Campanula gar-

ganica, and Campanula muralis, the Sun Rose or Helianthemum, the Thymes, Erinus alpinus, and the pink Soapwort, Saponaria ocy-moides.

All these thrive best in a sunny wall, although the Bellflowers will also flourish in partial shade, together with various ferns and the Welsh Poppy (*Meconopsis cambrica*).

CHAPTER 18

Flowers for the Shady Border

NEARLY every garden has its shady border, but how rarely is it even presentable, let alone attractive. That is because the soil is ill-cultivated and because unsuitable plants are chosen. It is most necessary that the soil be dug two spits (about 20 inches) deep ; if it is clayey, sifted coal ashes, leaf-mould, road grit from the garden paths, old potting soil, and well-decayed manure should be mixed in freely. Such treatment will improve the soil immensely and render it suitable for the plants. If the soil is light, manure, leaf-mould and old turf ought to be dug in.

The following are most suitable for the shady border : St. John's Wort (*Hypericum calycinum*) is a useful shrubby plant to grow under the shade of trees ; it is readily increased by division of the roots, and the yellow flowers are borne freely during summer on plants 12 to 15 inches tall. Another yellow-flowered plant suitable for such positions is the Leopard's Bane (*Doronicum excelsum*), about 2 feet high. The daisy-like flowers open in spring.

As a satisfactory edging plant, London Pride (*Saxifraga umbrosa*) is first on the list. *Sedum spectabile*, purple flowers, 1 foot high, and the white perennial Candytuft (*Iberis sempervirens*), 6 inches high, also grow and flower well in shade. The Hepaticas (*Anemone*

Hepatica), with blue, white, and pink flowers, are dainty spring-flowering dwarf plants to grow on shady banks, amongst hardy ferns and on rockwork. *Trillium grandiflorum*, or Wood Lily, thrives in moist shady situations, and produces snow-white flowers on stems 9 inches high during April and May.

The Crimson Campion. The Crown Campion, *Lychnis* (*Agrostemma*) *coronaria*, is showy ; it grows 2 feet high. It has silvery grey foliage which is attractive throughout the year, while during summer the rosy crimson flowers are produced on branching stems. There is also a white variety. The Crown Campion is raised from seeds sown on a border in April or May, to bloom the following year. The best hardy annual for a shady border is the Pot Marigold, *Calendula* Orange King. Sow seeds at the end of March.

The Globe Flowers. The showy Globe Flower, or Trollius, produces globe-shaped blooms from May to July. The plants grow 2 to 2½ feet high. Some of the best sorts are Empire Day, yellow ; Fire Globe, orange yellow ; Orange Globe ; *europaeus grandiflorus*, soft yellow ; and Lichtball, golden yellow. The Globe Flowers can be increased by division in autumn, also by seeds sown in April or May.

The Japanese Windflowers, varieties of *Anemone japonica*, are specially valuable amongst hardy border flowers $2\frac{1}{2}$ to 3 feet high. The saucer-shaped flowers, in white, pink, deep rose, and rosy crimson, are produced freely from late July to October. Distinct sorts are Kreimhilde, rich rose pink, semi-double; Lord Ardilaun, white, semi-double; Mont Rose, silver rose; Prince Henry, rose crimson; Queen Charlotte, pink; and Silver Cup, white, semi-double. March is the best time to increase the plants by division and root-cuttings.

Michaelmas Daisies are among the best autumn flowers for a partially shaded border. Several of the large-flowered dwarf sorts should be planted, notably King George, violet blue, $2\frac{1}{2}$ feet; Queen Mary, lavender blue, 2 feet; and Beauty of Ronsdorf, mauve, 2 feet. The *Lythrums* produce tall, erect spikes of brightly-coloured flowers, 4 feet high, in summer. *Salicaria* Brightness, pink, and *virgatum* Rose Queen are varieties recommended.

The Black Snake-root (*Cimicifuga simplex*), feathery white flowers, 3 feet high, in autumn; the yellow *Solidago*, Foxglove, *Aquilegia*, the Blue Monkshood (*Aconitum napellus*), and the Spiderwort (*Tradescantia virginica*) are other showy subjects for the partially shaded border.

There also one may grow Phlox, Bellflower (especially *Campanula grandis* and *Campanula latifolia*), Lupin, and *Veronica longifolia*.

It is very difficult to get plants to grow in shady places beneath large trees, for the ground there is so dry and poor that success is problematical. The most likely plants to flourish there are Butcher's Broom (*Ruscus aculeatus*), an evergreen shrub, Mahonia (*Berberis aquifolium*), St. John's Wort (*Hypericum calycinum*), Ivy, allowed to trail over the ground, and a creeping shrub called *Veronica radicans*, of which there is an attractive variety with variegated leaves.

CHAPTER 19

Flowers for Window Boxes

WINDOW gardening offers greater scope than one would imagine if the possibilities were judged only by the results generally seen. Almost all the window boxes in towns and suburbs are planted alike; evidently they are all filled by florists, whose favourite plants for the purpose are the white Marguerite, red Geranium, blue Lobelia, and yellow Calceolaria. These are all very well in their way, and they are good window plants, but they are very ordinary, and one soon tires of them, as one does of the same flowers in a flower-bed, day after day, week after week, from early summer until autumn.

Suitable Climbing Plants. The appearance of a window garden can be improved by having climbing plants up the sides of the window. For this purpose there is probably nothing better than the Canary Creeper, which is dainty, graceful, and bright. Perhaps a Clematis planted in the border beneath can be pressed into service, or a climbing Rose might be trained up the wall; either plant may thus be made part of the window garden.

Ivy-leaved Pelargoniums are showy and free-flowering plants, and by training some of them up supports and allowing others to hang over the front of the box an

attractive display can be arranged. For sheer brilliance of colouring there is probably nothing to excel the scarlet sage, *Salvia* *Pride of Zurich*. If planted above a groundwork of dwarf white *Alyssum* a simple and effective display is the result. The Monkey Musks are admirable for shady window boxes—their colours are brilliant. Fuchsias also do not mind a little shade.

In fairly large window boxes the scarlet *Dahlia* *Coltness Gem* might be used for a sunny position. Care would, of course, have to be taken to keep the soil moist in dry weather, and to pick off faded blooms to ensure a prolonged display.

The Allwoodii Pinks are to be recommended for a sunny window box, for they bloom continuously. The scarlet *Geum* *Mrs. Bradshaw* is also suitable, and it flowers throughout a long season. Dwarf and climbing *Nasturtiums* are good window box flowers, for they bloom more freely there than if planted in good garden soil. They must have a sunny position. It is a good plan to have a wire or other trellis fixed to the window box so that climbing plants can be trained over it. Such an arrangement is more attractive than merely an ordinary window box.

As the space for the roots is so

restricted, plants grown in window boxes need something better than ordinary garden soil to grow in. It usually pays to purchase a properly mixed compost from a local nurseryman if the essential ingredients—fibrous loam, leaf soil, and a little decayed manure—are not otherwise available.

Antirrhinums are well established as popular bedding plants, and they are equally suitable for window boxes.

Tuberous Begonias make a gorgeous display, but they should not be used where they will be exposed to much wind, or the blooms will be broken off. Fibrous-rooted Begonias are admirable if planted in front of these, and Crimson Bedder can especially be recommended.

A combination that pleases consists of Heliotrope with Tagetes (French Marigold) at the front. The single white Marguerite is often seen, but the double variety, Mrs. F. Sander, is far superior. There will be little room in a box planted with Marguerites for anything in front of them, except something to trail over the edge, such as a good variety of blue Lobelia.

In selecting annuals be careful to choose those that may reasonably be expected to continue in bloom until the autumn. If not thought too common, the Tom Thumb Nasturtiums are annuals that will make a bright and prolonged display. They flower most freely in poor soil. White Alyssum could be used with these as an edging.

CHAPTER 20

The Little Formal Garden

THE little formal garden ought always to play a part in the amateur's scheme. It has an especial fascination, and if carefully planned and planted possesses an old-world charm such as no other garden feature has in the same degree. The design should be simple, especially if the area at disposal is small; the flowers will then show to full advantage. There is plenty of scope for artistic expression both in design and in planting. The centre ought to be distinctly defined by some prominent object, such as a sundial, small pond, fountain or plant vase, and the paths should radiate from it. It is advisable to have straight paths, then the beds will be straight-edged; no space will be wasted, and the formal effect will be retained. Nothing adds more to the old-world charm of such a garden as this than the presence of stone rightly disposed; therefore the paths ought to be paved, or, if this is not possible, they should be of brick. If spaces are left here and there between the stones, they can be filled with little creeping plants, and when these are established they add immensely to the charm of the formal garden.

Laying Paved Paths. Considerable care is necessary in placing the stones or bricks, for it is essential that they should be on the

same level. This is made possible by laying them on a base of sand, ashes, or finely-sifted soil, in which they can be pressed firmly and made perfectly level. It is impossible to place them properly in rough soil; inequalities of surface are certain to show sooner or later. When putting in the plants (or seeds may be sown), it is wise to prepare a little good compost for them, then they soon become established and spread into attractive tufts. Needless to say, if stones are employed they should be laid in irregular fashion, pieces of varying shape and size being used. If bricks are chosen they must be arranged in methodical fashion; small bricks of the best quality look best, though they are more expensive than those of ordinary size.

If the paths are paved with stone it is not necessary to have an edging to the beds. It is, in fact, scarcely desirable, for in the absence of an edging the plants in the beds creep over the margin and make a charming show. If a sundial is chosen to mark the centre of the little formal garden—and nothing is more suitable—it should, if possible, be raised upon a stone base surrounded by a low rockery. Or a raised platform of brick or stone, whichever material is used for the paths, may be built, access being gained by two or three low

steps. An additional charm may be given to the little formal garden by having sunk paved paths and low walls of brick or stone built round the beds; in the crevices of the walls many plants may be grown.

Planting the Flower-Beds. The question of planting the beds of the formal garden is one that may be considered in many ways. It should be viewed from the strictly personal standpoint, for a garden of this kind should give expression to the intimate feelings and preferences of the owner. It is well suited to the cultivation of certain favourite flowers, those in which the owner takes especial interest. Or it may be made into a herb garden, a spring, summer, or autumn garden, or planted with flowers of one colour or of two colours, such, for example, as blue and white. In fact, there is an endless choice of planting schemes. One might make of it a grey garden, and plant among the grey-leaved shrubs flowers of pink and rose, lavender and mauve, and possibly nothing is more lovely than this.

For a spring display there must be groups of mauve Aubrietia and white Evergreen Candytuft; the rose-coloured Moss Pink (*Phlox setacea*) planted among the compact variety of yellow Alyssum, though not so close to the latter as to be overrun by it; double white Arabis as a groundwork to Tulips of different colours (no prettier combination than white Arabis and the rose-pink Tulip Clara Butt is likely to result); the pale yellow Alyssum citrinum and the pale mauve Tulip the Rev. H. Ewbank make a charming association. If the old plants of Viola or Tufted Pansy are left undisturbed, they, too, will make a beautiful display in spring,

and many colour schemes can be arranged with these alone. The Poet's Narcissus blooms at the same time as the crimson Aubrietia Fire King; this forms a perfect ground covering for it; so, too, does the purple variety Dr. Mules.

There ought to be groups of spring-flowering bulbs in variety, from the early Snowdrops, Crocuses, and Anemones, followed by Hyacinths and Daffodils, to the Tulips, decorative Onions or Alliums (of which *Allium neapolitanum*, with graceful heads of white flowers, is particularly good), Spanish Bluebell and Poppy Anemones. Then are there not autumn-sown annuals, such, for example, as the orange yellow Erysimum, the pink Silene, rose and red Clarkia, and others, together with Brompton Stocks? Without much difficulty the little formal garden can be made delightful.

A Blue and White Garden. For a summer show there is more variety from which to choose. If it is decided to make a blue and white garden the following might well be chosen: white Spanish Irises and Lupins, white Delphiniums, Oriental Poppy Perry's White, the white Trumpet Lily (*Lilium longiflorum*), Madonna Lily (*Lilium candidum*), Achillea The Pearl, white Tufted Pansy The Swan, Roses Molly Sharman Crawford, Frau Karl Druschki, and Mrs. Herbert Stevens, *Sidalcea candida* (a mallow-like plant), Carnations Mrs. Henwood and Farthest North, white Iceland Poppies, Gypsophila, Mrs. Sinkins Pink, and white Snapdragons.

Of blue flowers there are the Dropmore variety of Anchusa or Alkanet, Delphiniums, Lupins, Veronica amethystina and spicata,

blue Flax (*Linum narbonense*), *Campanula grandis*, *persicifolia*, *carpatica*, *lactiflora*, *glomerata* and others, Tufted Pansies, Spanish Irises, and such annuals as Love in a Mist, *Phacelia*, *Nemophila*, and annual *Delphinium*. These are capable of being commingled in small formal beds with excellent effect.

Rose and Grey. For a scheme in rose and grey some charming plants are available. For the grey we must rely chiefly upon foliage, as, for example, of Lavender, Rosemary, Flag Irises, Southernwood, Old Man, Pinks, *Nepeta Mussini* (which has pale violet-coloured flowers which do not clash with the proposed scheme), *Cerastium* or Snow in Summer, *Aubrietia*, Silvery Saxifrages, Edelweiss (which will grow without difficulty in stony loam near the margin), *Antennaria* or Cat's-ear, and the blue-flowered, grey-leaved *Veronica incana* (the blooms should be cut off if their colour is not required). Of rose-coloured flowers one might choose Carnations Mrs. Robert Gordon, Lady Hermione, Rosy Morn, Beau Nash, and Salmonea, rose-coloured Sweet Peas, *Sidalcea rosea*, the rose pink annual *Delphinium* or Larkspur (a lovely flower), *Spiraea Ceres*, Snapdragons, *Chrysanthemums*, Dahlias,

Stocks, Rose Mallow (*Lavatera trimestris*), *Clarkia*, Roses in variety, the bush Mallow (*Lavatera Olbia*), *Acroclinium* (a dainty Everlasting), *Pæonies*, Tulips, the rose and white Japanese *Lilium speciosum* and Japanese Anemone. We shall, of course, find room for a few climbing plants having blooms of the correct colour, and of these there is no lack among Roses.

It is not necessary to go to the trouble of making colour schemes to render the little formal garden attractive. If the outline or framework has been fashioned as suggested, it can be done by planting a common-sense arrangement of homely old-fashioned flowers, such as Lupin, Larkspur, *Pæony* and Poppy, Pink and Carnation, Lavender and Rosemary, Rose and Honeysuckle, Clematis and Wistaria, Old Man and Southernwood, and others that will suggest themselves to garden lovers. But above all things let the arrangement not be too formal, even in a formal garden; the formality should lie in the design and not so much in the manner of planting. Let the creeping plants overhang the margin of the border and trail round the base of the sundial; let the chinks in the paved paths be full of Thyme and Bellflowers, little Pinks and alpine Poppies.

CHAPTER 21

For Summer Flower-Beds

THOSE who cultivate plants that will not withstand the winter out of doors will be rewarded with brilliant displays of bloom that last throughout the summer months. Most of them give the best results when propagated fresh each year. The following are some of the most popular:

Alternanthera. A dwarf half-hardy plant grown for the sake of its coloured leaves ; it is used as an edging to summer flower-beds, more particularly to those of the pattern or carpet-bedding style. Cuttings are taken in August, placed in boxes of sandy soil, and kept in a slightly heated greenhouse for the winter. In spring, as the rooted cuttings begin to grow, other cuttings may be made from them, if necessary. If they are employed in carpet gardening to form part of a formal design, and they are generally so used, it is necessary to clip them frequently during the summer.

Calceolaria. The Calceolaria, that bears small yellow or reddish brown flowers and is so popular for summer bedding, is a low-growing, shrubby plant. The Calceolaria grown under glass for the sake of its large and brilliantly-coloured flowers in early summer is the herbaceous Calceolaria, which is treated as an annual and grown

from seeds every year ; it is not suitable for planting out of doors.

The shrubby bedding kind is increased by cuttings taken in September. These are made from the green shoots, cut to a length of 2 to 3 inches and inserted in pots or boxes of sifted soil with which sand has been mixed ; they may remain out of doors until the end of October, but should then be placed in a cold frame or greenhouse. No artificial heat is necessary, though it is wise to cover the frame with mats in very cold weather, or to put sheets of newspaper over those in the greenhouse. The soil should be watered only when it is fairly dry. If the cuttings are set at 3 inches apart they can remain undisturbed until planted out of doors in May.

Fuchsia. Fuchsia is a favourite for summer flower-beds. Old plants are especially useful, for they are tall and bloom freely ; they look well in the centre of a flower-bed or in garden vases. Fuchsias must be taken up in autumn, potted, and kept in a greenhouse safe from frost. They need very little water after the leaves have fallen. In spring the shoots are trimmed into shape and the plants are repotted. Young plants are obtained by taking cuttings in August and again in spring if necessary, the spring cuttings being made from the new shoots on the old plants. A few of the best

Fuchsias are Alice Hoffman, carmine and white ; Ay Lye, salmon pink and white ; Ballet Girl, rose and white ; Molesworth, double, white and red ; and Phenomenal, red and purple, double.

Geranium (Zonal Pelargonium).

Still a great favourite for summer bedding and scarcely surpassed for brilliant and continued flowering. Cuttings are taken in August and early September and inserted in boxes of very sandy soil. They may be kept out of doors until October, when the best place for them is in an airy frame ; they need very little water, and if a rainy period sets in when the cuttings are out of doors they ought to be placed in the frame. In winter they must be kept safe from frost. In February the rooted cuttings are repotted singly in 3-inch pots, and after being hardened off are planted out of doors in early June. Some of the most striking varieties are Paul Crampel, bright red ; King of Denmark, salmon ; Madame Kovalesky, orange salmon ; Ryecroft White, white ; H. Jacoby, crimson ; and Flower of Spring, green and white leaves and pink flowers.

The Ivy-leaved Pelargonium is grown in the same way as the Zonal Pelargonium. The favourite variety is Madame Crousse, salmon pink. Souvenir de Charles Turner, carmine rose, is also showy. These are very useful for filling garden vases, window boxes, and flower-beds.

Heliotrope. A great favourite for the pleasing colour of the flowers and for their fragrance. It is increased by cuttings in August ; further cuttings may be taken, if necessary, from the shoots which develop on the old plants when these are cut back in February. Some of the old plants ought to be

kept ; they are very handsome and useful for the middle of large flower-beds, or as a centre-piece in vases. They need to be kept safe from frost in winter, and at that season require little water. Lord Roberts and Swanley Blue are favourite varieties. A flower-bed filled with Heliotrope and Ivy-leaved Pelargonium Madame Crousse makes a most attractive display.

Lobelia. The blue bedding Lobelias are largely used as an edging to flower-beds and to cover the soil between taller plants ; for those purposes they are scarcely surpassed, as they remain dwarf and bloom for months together. Cuttings may be taken in August and again in spring under glass, the tops of the autumn cuttings being used as cuttings in spring. But Lobelia is now generally raised from seeds sown in a heated glasshouse in January ; the seedlings will be ready to be planted out of doors in late May or early June. There are two types of dwarf Lobelias, the compact and the spreading, the former being best for bedding.

The tall herbaceous perennial Lobelias are quite a distinct type. They are hardy in gardens in mild districts, but in cold places and on heavy soil they are scarcely safe out of doors in winter, though they do sometimes survive if a heap of old ashes is placed over them in autumn. It is, however, better to lift the roots and put them in boxes of soil for the winter, safe from frost ; the soil must be kept moderately moist. In April they may be replanted out of doors. The variety Queen Victoria, which has bronze green leaves and scarlet flowers, is one of the best, but

others of mauve, purple, carmine, and rose can be obtained.

Marguerite. The single white Marguerite is still largely grown, but the double white variety named Mrs. F. Sander is more handsome. Both are useful for summer flower-beds and for garden vases. Cuttings are taken in August, placed in pots or boxes of sandy soil, and kept in a frame or greenhouse safe from frost for the winter. In spring they are potted singly in small pots, and will be ready to be planted out of doors in June.

Salvia. The scarlet Sage (*Salvia splendens*) is perhaps the showiest of all the flowering plants used for summer beds; if massed it furnishes a dazzling display. A bed of scarlet *Salvia* edged with the dwarf white *Alyssum* always excites admiration. Cuttings are taken in August, placed in pots of sandy soil, and kept under glass safe from frost. In spring they are repotted singly in small flower pots and grown under glass until April, when they are hardened off for planting out in early June. Three of the best sorts are Harbinger, Fireball, and Glory of Zurich, all having scarlet flowers.

The blue Sage (*Salvia patens*) is a tuberous-rooted plant that is not hardy; the tubers must be lifted in autumn and stored in a box of sand under glass until spring. They are then potted in a compost of loam, leaf-mould, and sand, and will be well rooted by May, when they may be planted out of doors. This plant, which has flowers of intense blue colour, is easily raised from seeds sown in a slightly heated glasshouse in February; the plants will bloom the same year.

Tuberous Begonias. Tuberous Begonias are invaluable for filling summer flower-beds and for cultiva-

tion in flower pots in the greenhouse. They are not hardy, therefore when grown out of doors they are planted early in June, and are taken up again in autumn and stored for the winter. It is an advantage to mix leaf-mould freely with the soil when preparing the beds for Begonias, and a scattering of sand is beneficial. When their beauty has been spoilt by frosts in autumn the tubers should be taken up and spread out in a shed or greenhouse for a week or two to dry. When the dead leaves and soil have been removed the tubers will be ready to be stored for the winter. They keep best in boxes of sand or leaf-mould in a frost-proof place; they need little or no water in winter.

In spring the tubers should be placed in boxes of light leafy soil and covered lightly with similar material. If syringed frequently they will soon start into growth, and when the little shoots are half an inch or so long the tubers should be potted singly in small pots if to be grown in the greenhouse; later on they must be repotted into flower pots 5 to 6 inches wide. If to be planted out of doors, the Begonias can be put out straight from the boxes, for they will be well rooted by late May or early June.

Tuberous Begonias may be raised from seeds. If these are sown in a heated glasshouse early in January they will be large enough to plant out in early summer, and will bloom the same year. The seeds are very small; they must be sown in finely-sifted soil, and do not need to be covered except with glass and brown paper, which must be removed when the seedlings show through.

There are innumerable varieties of the tuberous *Begonia* in crimson, yellow, white, scarlet, primrose, and other shades of colour. For cultivation in pots under glass the double named varieties are favourites. The drooping varieties of *Begonia* look well in hanging baskets in the greenhouse. When the tubers have started into growth they should be planted in baskets previously lined with moss and filled with a soil compost of loam, leaf-mould, and sand.

The fibrous-rooted Begonias (particularly *semperflorens* and varieties) are also invaluable for the greenhouse and out of doors in summer. They may be raised from seeds in the way already advised, or they can be divided into several pieces in autumn, these being repotted separately.

Gazania (Golden Treasure Flower). One of the most dazzling flowers of the summer garden; the blooms are large, daisy-like in shape, and of brilliant golden yellow shade. The plant is not hardy generally, and cuttings should be taken in August, placed in sandy soil in a frame, and kept safe from frost for the winter. They are planted out of doors in early summer. *Gazania splendens* is the familiar kind.

Ageratum (Floss Flower). A half-hardy plant that is largely used for summer bedding. It may also be grown as a pot plant in the greenhouse; in pots it thrives in a mixture of loam, leaf-mould, and sand. Propagation is by cuttings taken in August; these will soon root if placed in pots of sandy soil in a frame kept closed for a few weeks. If the rooted cuttings are potted separately in early spring and kept in a warm glasshouse, they

will soon start into fresh growth and provide many more cuttings, if necessary. *Ageratum* may also be raised from seeds sown in a warm greenhouse in January or early February. For summer bedding the *Ageratum* is planted out in early June. If to be grown in pots for the greenhouse during the summer months the plants are repotted in spring into pots 5 inches wide. In winter a minimum temperature of about 50 degrees is required. A few of the best varieties are Swanley Blue, lilac blue; Tapis Blanc, white; and Imperial Dwarf Blue, lilac blue, of low growth, 9 inches high only.

Mignon Dahlias. During recent years the Mignon Dahlias, which reach a height of about 18 inches and bear comparatively large single flowers of various bright colours, have become very popular for filling summer flower-beds. The first variety, Coltness Gem, which has bright red blooms, is still very largely grown, for it provides an admirable display throughout the summer and early autumn months, from early July onwards. Other varieties, with flowers of various colours, have been raised, but none of them is brighter than Coltness Gem.

The old roots are taken out of the store in February and placed in boxes of leafy soil in a warm greenhouse. They will soon start into growth if kept moist, and the fresh shoots are inserted as cuttings in pots of sandy soil in a propagating case.

Snapdragon. The Snapdragon, or *Antirrhinum*, is unsurpassed as a plant for summer flower-beds. The intermediate type, which grows 15 to 18 inches high, is the most popular; it is represented by

numerous varieties in almost every colour except blue. Seeds of separate varieties are sold, and the flowers come remarkably true to colour. A bed planted with one variety is more attractive than if the colours are mixed.

Seeds should be sown in a heated glasshouse in January or February, in boxes of sifted sandy soil. When the seedlings are large enough to be handled conveniently, they are transplanted at 2 inches apart to other boxes, in which they remain until they are planted out of doors in May. If the dead blooms are picked off when the flowers on the main stem have faded, the plants will continue to flower throughout many weeks.

Verbena is a charming plant for summer flower-beds. The favourite variety is one called Miss Willmott, which bears pink blooms. This

variety is increased by cuttings in late summer; but Verbenas, in separate colours, can be raised from seeds sown in a warm greenhouse in February.

As an edging to summer flower-beds there are few more attractive plants than the dwarf variety of Sweet Alyssum, which is variously known as compactum and Little Dorrit. It grows only 3 or 4 inches high, blooms for many weeks, and is altogether an ideal plant for the purpose. As it is a hardy annual the seeds may be sown out of doors in March-April where the plants are to bloom in summer; or the seedlings may be raised in boxes in a greenhouse and planted out of doors in May. The seedlings soon spread into large plants and take up a good deal of room; they should be thinned out to give them full space for development.



A good walk between borders planted with *Antirrhinum*, which provide a delightful show in flower throughout many weeks



Water Lilies and other aquatic plants in a garden pool, its margin fringed with moisture-loving plants. A rock garden and flowering shrubs are seen in the background.



Conifers are graceful trees which turnish colour and beauty of form in winter. On the right, *Cupressus erecta viridis* The other trees are *Picea pungens glauca* or Blue Spruce, and *Cupressus* or Cypress



A Himalayan Primrose, *Primula denticulata*, which bears violet or lilac-coloured blooms in spring; it is suitable for the rock garden or shady border

CHAPTER 22

Flowers of Unusual Interest

A GAPANTHUS (African Lily).

A splendid evergreen plant with long, strap-shaped leaves and bearing umbels or heads of blue flowers on stems about 2 feet high in August and September. It is not hardy, except in very mild districts. This plant is usually grown in large flower pots or tubs, and is kept under cover in a greenhouse or light shed safe from frost from October until early summer. The plants may be potted or "tubbed" in autumn or spring in soil consisting chiefly of loam (old turf pulled to pieces), a little leaf-mould and sand being added; some thoroughly decayed manure in the compost is also beneficial. Careful watering is necessary until the plants are well rooted; water should be given only when the soil is moderately dry.

When the plants have filled the tubs water is needed very frequently, especially in summer, but little is required in winter. The plants seem to thrive and flower best when "potbound"—that is, when the pots or tubs are crammed with roots—provided they get plenty of water in summer and are occasionally fed with liquid made from farmyard manure. The plants are increased by separating them into pieces in spring and repotting each one in a separate pot or tub. If repotting is considered necessary, it

should be done in spring. The common kind is *Agapanthus umbellatus*; there is a white variety, *albus*; minor is much smaller in growth and has blue flowers.

Agathaea coelestis (Blue Daisy).

A popular little flower that may be grown in pots for the greenhouse and conservatory or can be used for filling summer flower-beds. It is a perennial, though it is commonly treated as an annual by taking cuttings every year in August. These root freely in pots of sandy soil in a frame kept closed. During winter the plants need a minimum temperature of 45 to 50 degrees. In spring the rooted cuttings should be repotted; those to go out of doors are planted late in May or early in June. As a potting compost, loam with a little leaf-mould and sand should be used.

Agave (Century Plant). The name "century plant" as commonly applied to the *Agave* gives an incorrect impression. It is widely believed that the *Agave* does not flower until it is 100 years old; that, however, is wrong. It may not bloom until it is 20 years old or more, and after having flowered it perishes. In this country the *Agave*, which is a native of Mexico, is usually grown in a large tub, and during the summer is often placed in a prominent position out of doors, e.g., on a terrace. In autumn it

must be taken under glass and kept safe from frost. The plants are placed in the tubs in spring; a good compost is necessary, for years will elapse before they require to be repotted. Old turf is best, and sand should be mixed freely with it. Good drainage in the bottom of the tub is essential. In winter little water is required, merely sufficient to prevent the soil from becoming dust dry. *Agave americana*, *applanata* and *ferox*—the last named having large and somewhat dangerous spines on the leaves—are chiefly grown.

Ajuga (Bugle). *Ajuga reptans* is a fairly common wild plant, but it is worth mentioning in a book of garden flowers for the sake of the variety *purpurea*, which has attractive bronze purple leaves and blue flowers. It grows only 4 inches high, and may be planted on the edge of the rock garden or flower border. It is sometimes used as an edging to summer flower-beds. It thrives in ordinary soil, and is increased by dividing the plants in spring.

Aloysia citriodora (Lemon-scented Verbena). A great favourite owing to its fragrant leaves. This plant is not hardy, except in mild districts, though against a warm, sunny wall, if protected in severe weather, it will often survive. It does well in a slightly heated greenhouse. The branches ought to be pruned in February; they are cut back sufficiently to keep the plant shapely. When 2 or 3 inches long the young shoots may be taken off and inserted as cuttings in pots of sandy soil under glass. This *Verbena* needs well-drained rather light soil; it bears small blush-coloured flowers in late summer.

Artemisia (Wormwood). Some of these plants are grown chiefly for the sake of their fragrant leaves, others for their flowers. The best of the latter is *Artemisia lactiflora*, a hardy herbaceous perennial, 4 to 5 feet high, that bears cream white flowers in late summer. It is an excellent border flower, thrives in ordinary soil, and is increased by dividing the clumps in autumn or spring. Of those grown for the sake of their fragrant leaves the chief one is *Artemisia abrotanum* (Southernwood).

Astrantia (Masterwort). This is more curious than beautiful, but is worth mention because it will thrive where many other plants fail—in shade and poor soil. The favourite is *Astrantia major*, having pink and white flowers which are surrounded by bracts of the same tint that remain attractive for some time; it grows about 2 feet high and blooms in summer.

Cedronella triphylla (Balm of Gilead). A half-hardy sage-like plant grown chiefly for the sake of its fragrant leaves. It reaches a height of about 3 feet, and bears purple flowers in summer. In most gardens it can only be grown out of doors in the summer months. It used to be very popular as a greenhouse plant. It is increased by cuttings placed in pots of sandy soil in a propagating case in the greenhouse in spring.

Cobaea scandens. This is a vigorous climbing plant that is usually grown from seeds sown under glass in February, the plants being put out of doors in May against a trellis or other support up which they can climb. It is, however, oftener grown in the greenhouse, where in one season it will cover a tall pillar and reach even

to the roof. The flowers are large, drooping, bell-shaped, and of purplish colour. In mild districts the plant may survive the winter out of doors ; if it does it will make rampant growth the following year.

Commelina. *Commelina coelestis* is worth growing for the sake of its blue flowers in summer ; although individually the blooms are short lived, the plants have a long flowering season. It has tuberous roots, and the stems reach a height of about 18 inches. In light, well-drained soil the tubers will pass through the winter safely, but on heavy land it is wise to lift and store them like Dahlias. *Commelina* is easily raised from seeds sown in spring.

Geranium (Hardy). The kinds of *Geranium* we are concerned with in this note are not those that bear large scarlet flowers and are so popular for summer bedding—the correct name of those is zonal *Pelargonium*. The hardy *Geraniums* are hardy herbaceous perennials suitable for planting in the rock garden or in the flower border. Some of the best of those for the rock garden are *argenteum*, silvery grey leaves and rose-coloured flowers, only a few inches high, and *lancastricense*, rose coloured. They need a sunny spot and gritty or sandy soil. Some of the border kinds are handsome plants. One of the best is *Endressii*, 18 inches high, with rose pink blooms ; *grandiflorum* and *ibericum*, both 18 inches high and having purple blue flowers, are showy. They thrive in ordinary soil. Both rock and border kinds can be increased by sowing seeds in spring or by division of the plants in early autumn or spring. It is wise to raise seedlings, leaving the old plants undisturbed.

Helleborus (Christmas and Lenten Roses). The Christmas Rose (*Helleborus niger*) attracts a good deal of attention because it blooms out of doors in mid-winter. There are several varieties, some of the best being *Madame Fourcade*, *angustifolius*, and *altifolius*. These plants always thrive best in a partially shady place in deep loamy soil to which leaf-mould and well-decayed manure have been added.



The hardy purple-flowered *Geranium ibericum*.

The best time for transplanting is in March or July. The Lenten Roses, varieties of *Helleborus orientalis*, bear large and handsome flowers in spring ; they need conditions similar to those described. There are several fine varieties having flowers of white, rose, crimson, and other shades of colour.

Humulus (Hop). The common Hop is a vigorous climbing plant sometimes used in gardens to cover an arch. It grows quickly, makes an attractive leafy covering, and towards the end of the summer the

bunches of hops add to its attractiveness. The roots may be put in the ground in autumn or spring; they are increased by division at either of those seasons. The annual variegated-leaved Japanese Hop is more ornamental; it is raised from seeds sown under glass in March, the seedlings being planted out of doors in May. It is a climbing plant of quick growth.

Hydrangea. Everyone knows the Hydrangea, and most amateur gardeners must have longed to have a really fine specimen of this plant in a tub or large flower pot. When



Hydrangea is propagated by cuttings placed in pots of sandy soil in a frame in July-August.

well grown and in full bloom it is very handsome. The blue varieties are most popular, though those of mauve and heliotrope shades are fascinating, and the ordinary rose pink colour is attractive. In mild gardens the favourite Hydrangea (varieties of *H. hortensis*) do well out of doors, but it is usual in most districts to grow the plants in tubs and flower pots and to place them in a greenhouse or light shed for the winter, where they will be safe from severe weather. The plants may be obtained and potted or "tubbed" in autumn or spring. Really good turfy soil ought to be used, and decayed manure, a little leaf-mould and sand should be mixed with it. During winter very little water is required, but in

summer the plants need a good deal.

How to Prune. Most amateurs go wrong with the Hydrangea in the pruning. The proper time to do this is in late summer or autumn when the flower heads have faded; thin weakly shoots are then cut out, and the remainder are slightly shortened, usually to the first good bud, which will be found three or four joints down. It is beneficial to remove an inch or two of the top soil in early spring and to replace it with fresh compost. If repotting into large pots is required it should be done in early autumn.

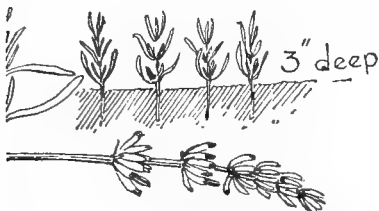
Hydrangea is increased by cuttings taken in August and inserted singly in small pots of sandy soil in a frame kept closed for a few weeks. The plants are put in a frost-proof frame or greenhouse during the winter, and in spring are repotted into pots 5 inches wide, in which they will bloom in early summer, each plant producing one large head of flowers.

Blue Hydrangeas. Pink Hydrangeas can be made to produce blue or bluish flowers by the use of a "blueing powder" sold by those nurserymen who specialise in the cultivation of this plant; directions for use are supplied with it.

Another handsome Hydrangea not often seen in amateurs' gardens is *H. paniculata grandiflora*; this bears very large cream white heads of bloom in late summer and is grown out of doors as a hardy shrub. The branches must be pruned in spring, being then cut down to within 6 inches or so of the base of the previous summer's growth.

Lavandula (Lavender). This fragrant shrub is a favourite with all amateur gardeners. It makes a

delightful low hedge, blooms in August and thrives in ordinary soil, though preferring that which is fairly light. If the flowers are required for household use they must be gathered on a dry, sunny



Lavender makes a charming low hedge, and is increased by cuttings in September.

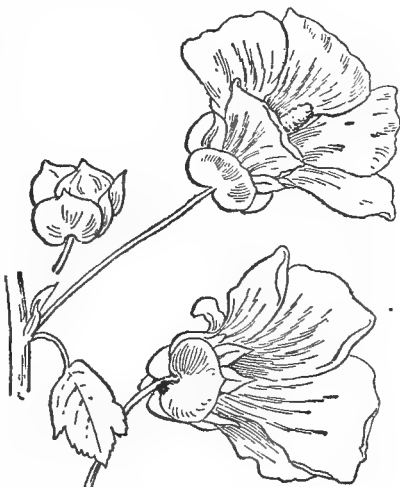
day just before they are fully expanded. The bushes should be trimmed into shape as soon as the flowers are over, but if hard pruning is needed to make old bushes shapely, that ought to be done in April. It is, however, doubtful if old straggling bushes are worth keeping; cuttings inserted in sandy soil in a frame in August or September form roots quickly and soon develop into useful plants. The common Lavender of gardens is *Lavandula vera*. The Munstead variety has flowers of deeper colour, blooms earlier, and does not grow so tall as the ordinary sort.

Lavatera (Mallow). The bush or tree Mallow (*Lavatera Olbia*) is a shrubby plant that every amateur ought to grow. It is vigorous, reaching a height of 4 to 5 feet, and bears carmine rose mallow-like flowers throughout the summer months. The variety *rosea* is to be preferred to the typical sort, as its flowers are of purer colouring. The shoots of this Mallow ought to be cut down in spring to within 9 or 10 inches of the base of the previous summer's growth.

The loveliest of the annual Mallows is a variety of *Lavatera trimestris* named *Loveliness*; it grows 3 feet or so high and bears rose crimson flowers in summer. The seeds may be sown under glass in autumn or in spring, the seedlings being planted out of doors in April, or they can be sown out of doors in March or April where the plants are to bloom. The seedlings need to be thinned out to 8 or 10 inches apart.

Leontopodium (Edelweiss).

Everyone knows of this flower by name at least, and it is now fairly common on rockeries. There is nothing difficult about its cultivation if it is planted in spring in a mixture of ordinary soil and grit or stones in a sunny spot. The grey, woolly flowers appear in summer. It can be raised from seeds sown in a box of sandy soil in a frame in spring, but the seedlings will not bloom much, if at all, until about two years old.



Flowers of the Rose Mallow, or *Lavatera*, a showy hardy annual.

Lysimachia. Creeping Jenny (*Lysimachia nummularia*) is a useful creeping plant suitable for sunny or shady places; it bears yellow flowers in summer and is easily increased by detaching rooted pieces and replanting them. The variety named *aurea*, having golden yellow leaves, is attractive. Others are *Lysimachia clethroides*, 3 feet high, bearing white flowers in July, and *longifolia*, 2 feet, which has yellow flowers in July.

Meconopsis (Blue Poppy). The Welsh Poppy, which has showy orange and yellow flowers in spring and early summer, is the most familiar kind; it is useful for sowing on a dry wall or in the rock garden. It will also thrive on a shady border if the soil is not too heavy. Seeds are sown in early summer on a prepared seed bed out of doors, and the seedlings are transplanted in September, then being placed where they are to bloom. When established in a garden the Welsh Poppy often seeds itself.

Of the exotic kinds *Meconopsis Wallichii*, with blue flowers, and *integrifolia*, light yellow, are two of the most beautiful. They are treated as biennials, seeds being sown in a pot of sandy soil in a frame in June. The seedlings must be transplanted before they become crowded, and in autumn are planted where they are to flower. Moist loamy soil and partial shade suit them best. It is often necessary to place a raised piece of glass over them in winter to keep off excessive rain.

Mesembryanthemum (Fig Marigold, Ice Plant). These plants have thick fleshy leaves and handsome flowers of various colours, but few of them are hardy except in very

mild districts. They need well-drained soil and a hot, sunny position in the rock garden. The hardiest is *Mesembryanthemum crystallinum* with reddish or white flowers; it is raised from seeds sown in a slightly-heated glasshouse in February, the seedlings being planted out of doors in May. A favourite kind for summer flowerbeds is *M. cordifolium variegatum*, a dwarf plant with prettily coloured leaves. It is increased by cuttings taken in August and kept safe from frost during the winter. The fresh shoots in spring may also be taken off and inserted as cuttings if necessary. The plants are put out of doors in May.

Mimulus (Musk). The old yellow Musk (*Mimulus moschatus*) has lost its popularity since it lost its fragrance in a way that has not yet been explained. Its yellow flowers are, however, attractive, and it is useful for window boxes and pots. It is increased by detaching rooted pieces in spring and placing several together in flower pots 5 or 6 inches wide. It thrives in the usual compost of loam, leaf-mould, and sand.

The Monkey Musks, varieties of *Mimulus luteus*, have large and handsome flowers of various brilliant colours, and they make a delightful display in a half shady place and moist soil. They are hardy in most gardens, though on heavy soil they are apt to die off in winter. They are easily raised from seeds sown in early summer in a box of soil in a frame or on a seedbed out of doors. The seedlings are transplanted before they become crowded, and in autumn are put out where they are to bloom or are kept in a frame during the winter and planted in spring.

Passiflora (Passion Flower). The Passion Flower is really more of a greenhouse than an out-of-door plant, but *Passiflora caerulea* and its white variety, named *Constance Elliott*, are suitable for planting against a sunny wall in districts that do not experience severe winters. The plants bloom for many summer weeks, and often they are succeeded by large, yellow, egg-shaped fruits. These Passion Flowers thrive in ordinary soil that is well cultivated. It is convenient to have a trellis affixed to the wall on which the shoots can be trained more easily than directly on the wall. For the first few years no regular pruning is needed, but when the plant has filled its allotted space the side shoots should be shortened to within a few buds of the main branches in spring; at that season some thinning must also be done if the shoots are crowded. Passion Flowers are increased by sowing seeds under glass in spring, or, better still, by taking cuttings from the fresh growths and inserting them in pots of sandy soil under glass.

Phalaris (Gardeners' Garters). Ribbon Grass or Gardeners' Garters are popular names applied to the ornamental Grass, *Phalaris arundinacea variegata*. It is hardy, grows 2 to 3 feet high, and has attractive green and white leaves. It thrives in ordinary soil, and is increased by dividing the plants in autumn or in spring. *Phalaris canariensis* is an annual with a globular head of grass-like bloom; it is raised from seeds sown out of doors early in April where the plants are to grow. It supplies seeds for feeding cage birds.

Platycodon (Chinese Bellflower). An attractive hardy herbaceous

plant having blue flowers and curious, balloon-shaped buds, hence its popular name of "balloon flower." It is usually planted in the rock garden, though it may be grown towards the front of the flower border if the soil it well drained. The favourite sorts are *Platycodon Mariesii*, blue, and its white variety, *alba*. The plants are increased by lifting and dividing the tufts in spring.

Polygonatum (Solomon's Seal). A favourite hardy plant for the shady border. In spring it sends up leafy stems which reach a height of 3 feet or so and bear very pretty, drooping, white flowers. It is easily increased by detaching rooted pieces and replanting them in autumn or spring. *Polygonatum officinale* is the name of the common kind.

Polygonum (Knot Grass). Some of these plants are very vigorous and spread at an alarming rate, *P. cuspidatum* especially. They are suitable only for planting in the wild garden, or in other places where they may increase and multiply without doing harm to other plants. Attractive low-growing kinds for the rock garden or front of the flower border are *P. affine* and *P. bistorta*, which bear rose-coloured flowers in summer and have autumn-tinted leaves, and *sphaerostachyum*, having red flowers in August and September. *P. cuspidatum* and *P. sachalinense* are vigorous, reaching a height of 9 or 10 feet, and bear pale flowers in late summer; they are suitable only for the informal garden or other places where there is room for them to spread.

Polygonum baldschuanicum is a beautiful climbing plant of slender, rampant growth that becomes smothered in small cream white

flowers in May, and has a second crop of bloom in late summer. It may be allowed to grow over poles, or looks well on a tall evergreen such as Holly or Cupressus.

***Punica granatum* (Pomegranate).**

If this shrub is grown out of doors it must, in most parts of the country, be planted against a sheltered and sunny wall, such as one facing south or south-west. The best soil in which to plant is well-drained sandy loam; if the ground is clayey some of it should be removed and replaced by a suitable mixture. The scarlet flowers appear in summer, and in a favourable season may be succeeded by fruits. A variety called *nana* is said to flower more freely than the typical kind, which, it must be confessed, is often disappointing in that it does not bloom well. Little pruning is required except to keep the shrub shapely and to prevent the branches from becoming overcrowded by cutting out weakly ones occasionally in winter or early spring.

***Ranunculus*.** The tuberous-rooted sorts bear very showy flowers of brilliant colouring in spring and early summer; the curious claw-shaped roots should be planted in early autumn and again in spring to provide a succession of bloom. They like well-drained soil and a sunny position; if the ground is heavy it should be well dug and made suitable by adding leaf-mould and sand freely. If the bed is raised a little above the general level it will be an advantage on heavy land. The roots are covered with about 2 inches of soil. When the leaves have died down the roots should be lifted, dried, and stored until planting time. A mixed collection of varieties will furnish many brilliantly-coloured flowers.

Other sorts of *Ranunculus* are *aconitifolius flore pleno* or Bachelor's Buttons, which grows nearly 2 feet high and bears a profusion of small double white flowers in early summer. It must be planted in moist soil, and thrives best in the bog garden or on the side of a pool. *Ranunculus amplexicaulis* needs similar conditions; it reaches a height of 12 inches or so and has white flowers. *Ranunculus pyrenaicus* is one of the most attractive of the rock garden kinds; it is of low growth and bears numerous white flowers in early summer. It thrives best in moist loamy soil with which grit or sand has been mixed.

***Romneya Coulteri* (Tree Poppy).**

This is a very beautiful plant, though it is not one of the easiest to grow successfully. It will reach a height of 5 feet, has grey green leaves and bears large white poppy-like flowers in summer. The shoots are often killed to the ground in winter, but fresh ones are produced in spring if the rootstock is not damaged. *Romneya* is most likely to thrive if planted in spring in a border of well-drained loamy soil at the foot of a wall facing south, or in some other similarly sheltered and sunny place. In winter it is wise to place old ashes round about the base of the stems for protection. In very mild districts the plant is of shrubby growth and needs no protection in winter. *Romneya Coulteri* is the most familiar. Another, *Romneya trichocalyx*, is similar.

***Rosmarinus officinalis* (Rosemary).** The Rosemary needs no introduction to garden lovers; everyone is familiar with it, though it is not planted so often as one would have thought likely. It is a most

attractive shrub that will reach a height of 4 to 5 feet, its leaves are fragrant, and it bears lilac mauve flowers in early summer. Rosemary is seen at its best in well-drained soil and a sunny position ; it dislikes ground that gets waterlogged in winter. It does not need to be pruned regularly, but if the bushes become unshapely they should be trimmed as is required as soon as the flowers are over. Propagation is effected by inserting cuttings in pots of sandy soil placed in a frame in August.

Santolina (Lavender Cotton).

Santolina chamaecyparissus is an attractive little shrubby plant growing up to 2 feet high, having grey fragrant leaves, and yellow flowers in summer. It likes a sunny place and well-drained soil, and is increased by cuttings taken in August and placed in pots of sandy soil in a frame.

Stachys. Few of the *Stachys* are worth the attention of the amateur gardener, but reference ought to be made to two of them ; they are hardy and easily grown in ordinary soil, and are increased by division in autumn. Perhaps the most useful is *Stachys grandiflora*, which grows 15 inches or so high and bears showy purplish, dead-nettle-like flowers in summer. *Stachys lanata* or Lamb's-tongue is a good edging plant ; it is of low growth and has attractive white woolly leaves.

***Tropaeolum speciosum*, the Chilean Flame Flower,** is a most beautiful hardy climbing plant with light green, attractive leaves, and rose scarlet flowers in late summer. It is a tantalising plant, rather difficult to grow in warm southern gardens. In Scotland and other cooler places it thrives without

much trouble on the part of the gardener. It is a wonderful sight when in full bloom and is worth every effort to get it established.

The secrets of success are to plant the roots in a cool shady place, and to allow the slender climbing shoots to find their way to the sunshine. Those who have hitherto found its cultivation difficult should purchase what are called pot-grown roots, i.e., roots established in pots. These should be planted in April in soil with which leaf-mould has been mixed very freely : a soil covering of 2 inches is sufficient. If the ground is clayey, the clay ought to be dug out and replaced by a compost of half loam (old turf) and half leaf-mould, with a scattering of sand. During dry weather the roots must be kept moist.

The Flame Flower must have a support to which it can cling. An ideal position is on the shady side of a holly or other evergreen hedge over which the shoots can ramble. It may be planted on the shady side of an evergreen tree or trellis ; the roots must have cool moist soil that does not dry out quickly in summer. A top-dressing of leaf-mould in spring, just before fresh growth begins, is beneficial. The stems are of annual duration only and die down in autumn, but the roots are perennial.

Yucca. The common *Yucca gloriosa*, or Adam's Needle as it is popularly called, is a striking plant with large, stiff leaves, and in summer it bears an immense spike of cream white bloom. It is a most ornamental plant for a lawn. It thrives best in well-drained loamy soil. Other attractive kinds are *Yucca filamentosa*, a low-growing plant, and *Yucca recurvifolia*.

CHAPTER 23

Border Carnations and Pinks

BORDER Carnations have been greatly improved during recent years, and there is now no excuse for cultivating poor varieties. They thrive in ordinary soil that is deeply dug. If it is heavy, mixing leaf-mould, sand, and road grit improves it, while if light the addition of turf and decayed yard manure, preferably cow manure, is advisable. The best time to plant is in October; the plants should be put at about 15 inches apart. The only attention they will need until spring is that hoeing must be practised whenever the soil is reasonably dry, and a sprinkling of bonemeal during March will do good. As soon as the flower stems begin to rise they should be staked with thin bamboo canes, or with the spiral coil stakes sold specially for the purpose. If the stems are allowed to become misshapen owing to lack of support the display will be marred to some extent. If the finest flowers are wanted, disbudding should be practised to the extent of removing some of the secondary buds that are found near the chief buds.

Layering is an important work in the cultivation of Border Carnations. This should be done in July, or as soon as the flowers are over. A number of the best-placed shoots are selected, the lower leaves are

stripped off, and a slit is made in the lower part of the stem to encourage the quick formation of roots. In order to keep the slit portion open, the shoot is made firm in the ground by means of a small peg or hairpin inserted immediately behind the layer; this, if inserted properly, will have the effect of keeping the layer upright and so keeping the slit portion open. It is a good plan to cut off the flowering stem, and to bring the whole plant down near the soil; the layers are then more easily brought into position. The layers will be well rooted by October, and may then be severed and taken up, to be planted out to form a fresh bed. Or they may be left where layered if it is desired to form a large clump. Border Carnations are not at their best the year following planting, and it is wise to leave them undisturbed for two or three years, so that they may develop into large plants.

It is easy to raise these plants from seed. The best possible seed ought to be obtained, then few single flowers will appear. Seed is sown in April in a box of sifted, sandy soil placed in a frame. If kept moist and shaded the seedlings will appear in three or four weeks, and when about 2 inches high they should be transplanted to a border out of doors, there to remain

during the summer. In October they may be put out where they are to bloom the following year.

Some of the best varieties are the following : Bookham White, white ; Bookham Clove, crimson ; Gordon Douglas, crimson ; The King, crimson ; Fujiyama, scarlet ; E. K. Wakeford, pink ; Rosetta, rose ; Border Yellow, yellow ; Kelso, purple and apricot ; Mrs. Griffith Jones, apricot ; Miss Rose Josephs, wine colour ; Greyhound, grey ; Purple Emperor, purple ; Rony Buchanan, yellow marked with rose ; Melton Prior, yellow marked with scarlet ; Lord Kitchener, white marked with red ; Daisy Walker, white marked with scarlet ; Mrs. Andrew Brotherston, purplish crimson marked with white ; Mrs. Arthur Cruwys, purple striped with scarlet. Then there are Picotees, in which the colour is in the form of a thin or broad margin to the petals ; these, however, are not so suitable for out-of-door cultivation as those described.

Pinks. The Pink is one of the most delightful of old-fashioned flowers, and no garden can afford to be without some of them. They thrive best in well-drained soil, but the addition of crushed lime or mortar rubble, leaf-mould, grit, and sand will render heavy soil quite suitable. They should be planted in October.

The plants are increased by "pipings" taken in June and placed in sandy soil under a handlight out of doors and shaded from bright sunshine. A "piping" differs from a cutting in that it is pulled out of its socket, instead of being cut off and trimmed. Pinks can also be increased by pulling the old plants to pieces in September and replant-

ing the pieces immediately. It is advisable to work some sandy soil among them when replanting.

Pinks are especially well suited to forming an edging along the margin of the flower border, and for this purpose the old white variety named Mrs. Sinkins is not surpassed. Pinks may be easily raised from seeds in the way described in the notes dealing with carnations.

Some of the best Pinks for border planting are Albino, white ; Anne Boleyn, rosy purple ; Ernest Ladhams, pink and maroon ; Her Majesty, white ; Mrs. Sinkins, white ; Marion, rose pink ; and Gipsy Queen, white and crimson.

Special mention should be made of the race of garden Pinks called *Dianthus Allwoodii* ; they have been raised by crossing the perpetual-flowering Carnations and the Pinks. They blossom freely for weeks together and are excellent garden flowers. Some of the chief varieties are Rufus, reddish maroon ; Harold, white ; Susan, lilac rose with black centre ; Robert, old rose ; Dorothy, rose pink ; and Jean, white with coloured centre.

Some of the Pinks which are commonly grown in the rock garden are delightful plants for flower-beds and borders. They are worth planting freely, for even when out of bloom their tufts of grey-green leaves are attractive. Seeds can be bought under the name of rock Pinks. The Cheddar Pink, *Dianthus caesius*, is a beautiful plant of compact tufted growth which makes an admirable edging ; it bears numerous rose-coloured flowers in early summer. It can be increased by cuttings in summer or by seeds sown in a box of sandy soil in a frame in spring.

CHAPTER 24

How to Grow Sweet Peas

AMONG the annuals, those plants that sprout, blossom, and die within a year, there are none so popular and none more attractive than Sweet Peas. The flowers are of dainty form, they have some fragrance, and the range of colour is now very wide; the plants blossom from early summer until autumn, providing the cultivation is good.

Those who visit flower shows and admire the wonderful bunches of Sweet Peas which are generally to be seen there, often decide that they, too, will grow such blooms the following year. Forthwith they order seeds of the varieties exhibited, and in due course sow them out of doors in spring. But that is not the way to obtain flower stems 18 inches in length and four blooms on a stem, such as are seen at exhibitions. Special methods of cultivation are necessary. That is not to say that Sweet Peas grown under ordinary, everyday methods are to be despised—far from it; they are among the most charming and most useful hardy flowers it is possible to have. But in order to prevent disappointment it ought to be generally known that Sweet Peas equal to those which are exhibited at flower shows are not obtained by treating the plants just as, for example, Shirley Poppies are

treated. Something more than sowing in the open and thinning out the seedlings is required.

How to Grow Fine Flowers. Whether you decide to give the plants such attention as will ensure the finest possible flowers, or whether you wish to grow an ordinary row, it is necessary in the first case, and well worth while in the second case, to prepare the ground thoroughly. The way is to take out a trench about 2 feet wide and 2 feet deep, placing the upper soil on one side and the lower soil on the other side. Dig over the bottom of the trench and then mix with it, by means of a garden fork, a layer of leaves, partly decayed garden refuse, or strawy manure. Having given the excavated lower soil a "dusting" of lime, return it to the trench. Then mix some yard manure with it freely. Finally the upper soil is returned to the trench, basic slag being mixed with it at the rate of 6 ounces to the square yard. This work ought to be done in the autumn, the surface soil of the trench being thrown up roughly so that it shall be exposed to the weather of winter. In spring, two or three weeks before planting out or sowing, scatter soot and wood ashes freely on the surface and fork them in. A week before sowing or planting apply superphosphate of lime

5 parts, sulphate of ammonia 2 parts, scattering the mixture at the rate of 1 ounce per square yard and hoeing it in.

Such a trench ought only to be prepared in cultivated land ; if it is dug in ground of which the remainder is undisturbed, the Peas are not likely to be a success : in wet weather the trench will probably become waterlogged, for it will have the effect of draining the surrounding land.

As Sweet Peas, in common with most other plants, do not thrive well in loose soil, the trench ought if possible to be prepared during the autumn months, so that the soil will have settled and become firm by spring. If unavoidably the preparation of the trench is undertaken in spring, the soil, when reasonably dry, must be made firm by treading.

A position that is shaded during the hottest part of the day is to be preferred to one that is fully exposed to sunshine. Most of the salmon and scarlet Sweet Peas soon lose their richness if grown in too sunny a place ; if at all possible they should be grown in a partially shaded position.

Sowing in Pots. If a frame or cold greenhouse is available, the seeds can be sown in autumn with advantage ; in the absence of such protection there is risk of loss, though this varies considerably according to the soil and climate of the district in which the grower lives, and on light, well-drained soil Sweet Peas sown out of doors in autumn often pass through the winter unharmed. On the other hand, when the soil is heavy and the winter very wet many of the seedlings perish.

All things considered, it is best to sow in pots or boxes, and to bring these under cover when the bad weather sets in. Sow during the first fortnight of October, placing one seed in the middle of each 2½-inch flower pot, or five seeds round the edge of each 5-inch flower pot. A suitable compost with which to fill the flower pots (which should be clean and properly drained) consists of sifted loamy soil two-thirds and leaf-mould one-third. A good sprinkling of wood ashes, soot, and crushed mortar rubble should be added, all the ingredients being well mixed together. Put the seeds about an inch deep. Seeds may be sown in the same way in spring, the pots being placed in a greenhouse or frame. From the end of January until the end of February is a suitable period.

Sowing in the open garden is carried out from early February until towards the end of March. The seeds may be sown fairly thickly, and if they germinate freely superfluous seedlings must be removed ; they should be left at 4 to 6 inches apart finally.

Planting Out. Seedlings raised in pots or boxes in autumn or spring are planted out of doors in April, a time being chosen when the soil is reasonably dry. For a week or two before they are planted the Sweet Peas must be hardened off by being placed out of doors ; if they are taken directly from a frame or greenhouse their growth is liable to be checked. The plants should be arranged at from 6 to 12 inches apart, according to the purpose for which they are grown—at the lesser distance if only for garden display or for cut blooms ; at the greater distance if for exhibition.

When the seedling Sweet Peas, grown in pots or boxes, are 4 or 5 inches high the tops ought to be pinched off ; this will have the effect of inducing other shoots to grow—two on some plants, more than two on others. It is found that the blooms produced by the secondary shoots are finer than those that can be obtained from the original shoot. Two or, in the case of vigorous varieties like R. F. Felton, three stems are allowed to each plant ; when dealing with some of the weak-growing kinds, one stem to each plant may give the finest blooms. As soon as the seedlings are planted out they must be supported by short, twiggy sticks, and a week or two afterwards the taller sticks must be put in. In arranging these it is important not to let them meet at the top of the row, or later on it will be found that the Peas will fall over and the flower-stems become crooked. Those who grow for exhibition often support each stem by means of a bamboo cane, but when Sweet Peas are grown for garden display such a method is out of the question.

The Best Varieties : Annie Ireland, white edged with pink ; Charity, crimson ; Charming, cerise ; Constance Hinton, white ; Colne Valley, lavender blue ; Dobbie's Cream, cream ; Doris, cerise rose ; Empire, bright rose pink ; Gladys, lilac ; Gloriosa, orange scarlet ; Grenadier, cerise ; Hawlmark Pink, carmine pink ; Hercules, bright pink ; John Ingman, carmine rose ; Magnet, pink ; Majestic Cream, cream ; Bluebell, purple blue ; Mrs. A Searles, cerise ; Picture, cream pink ; Powerscourt, lavender ; Ravenswing, maroon ; Royal Purple, purple ; Royal Scot, scarlet ; R. F. Felton, lavender ; Sunkist, cream and rose ; The President, orange scarlet ; Warrior, maroon ; Wembley, lavender ; What Joy, cream ; W. J. Unwin, salmon and cream.

Other newer ones are Atlantic, pink ; Amethyst, blue ; Gigantic, white ; Gladys Improved, lavender ; Grand National, cream ; Mastercream, cream ; Mystic, lavender and white ; Pink Magnolia, cream pink ; Radiant, salmon pink ; Rosemary, rose ; and The Dubarry, rose carmine.

CHAPTER 25

Lilies that Amateurs should Grow

THERE are many graceful and attractive hardy Lilies suitable for planting in amateurs' gardens, and most of them are easily managed. If treated correctly they will increase in size and splendour as the years pass by, and develop into bold clumps that bloom freely in summer and early autumn.

Some of the bulbs are imported, others are grown in this country ; imported bulbs do not usually arrive before the end of the year or in January, and are therefore planted in early spring. Others can be obtained for planting in autumn. It is worth while preparing the sites for Lily bulbs thoroughly, for it is necessary to leave them undisturbed to see them at their best.

For a group of five or six bulbs a hole 18 inches deep and 2 feet across should be excavated, and before the soil is filled in again leaf-mould and sand should be mixed with it very freely if the ground is clayey. On light land thoroughly decayed manure, leaf-mould, and turf soil should be used for filling the hole. Most hardy Lilies will flourish in sunny or slightly shady places, but they are not a success in hot places in soil that dries out quickly in summer.

The Madonna Lily (*Lilium candidum*), which bears white fragrant flowers on stems 4 feet or so high in

June, is a great favourite. The bulbs ought to be planted in August or early September so that a tuft of leaves will be formed before winter sets in ; if planting is delayed until autumn the bulbs are not likely to bloom well the following year. They should be set 3 inches deep in a sunny place. As this Lily is particularly subject to the attacks of a disease which disfigures and causes the collapse of the stems, the bulbs ought to be shaken in a bag of sulphur, and sulphur should be mixed with the soil before planting is carried out.

The old Orange Lily of cottage gardens (*Lilium croceum*), which grows about 3 feet high and bears orange yellow flowers in July, is very showy. The bulbs ought to be planted in early autumn and covered with 4 inches of soil.

Lilium elegans is an attractive Lily which blooms in June and July ; it grows only 18 to 24 inches high, and bears flowers of brilliant shades of colour. There are many varieties in which the flowers are orange, yellow, or crimson. The bulbs ought to be covered with 4 inches of soil.

Lilium Hansoni grows 3 feet high and bears yellow flowers in June ; the bulbs need only be covered with 3 inches of soil. The apricot-coloured *Lilium Henryi* is a particularly graceful plant, 4 to 5 feet

high, which bears pale apricot-coloured blooms in August and September. Like many other Lilies, it produces roots at the base of the stem as well as below the bulbs, and should be planted not less than 5 inches deep.

The Martagon Lily (*Lilium Martagon*), 3 to 4 feet high, has purplish blooms in July; the bulbs do not produce stem roots, and need a covering of about 3 inches of soil only. The white variety (*Martagon album*) is more beautiful, though the bulbs are rather expensive.

The Panther Lily (*Lilium pardalinum*) is one of the most handsome of all the Lilies that are easily grown; the stems reach a height of 5 to 7 feet, and in July bear handsome blooms in which the predominating colours are scarlet and yellow. The bulbs should be set about 4 inches deep.

The Yellow Turk's Cap Lily (*Lilium pyrenaicum*), which blooms in June, grows 2 to 3 feet high, and bears small greenish yellow flowers. The bulbs should be set about 3 inches deep.

The Chinese Regal Lily (*Lilium regale*) is one of the most beautiful of all; the stems, covered with small narrow leaves, reach a height of 4 to 5 feet, and bear large white flowers flushed with yellow and stained with reddish brown. The bulbs ought to be covered with 4 or 5 inches of soil.

The Nankeen Lily (*Lilium testaceum*) is a tall and graceful plant, 4 feet high, which is in full beauty in late June and July; the flowers are pale apricot yellow in colour. The bulbs need a soil covering of 4 inches. *Lilium umbellatum* grows 2 feet or so high, and bears upright heads of bloom of orange,

yellow, or reddish colouring. The bulbs are set about 4 inches deep.

The Tiger Lily (*Lilium tigrinum*) is a great favourite, and its cultivation gives no trouble. The stems reach a height of from 4 to 6 feet, and bear orange red flowers in late summer. The bulbs are stem-rooting and should be covered with about 5 inches of soil. The finest varieties are *splendens* and *Fortunei*, which are much more vigorous than the type and bear larger bunches of flowers of rich orange scarlet colouring.

If possible all the above Lilies ought to be planted during the early autumn months. Home-grown bulbs of most, if not all, of them can be bought at that season of the year.

Lilies which cannot usually be purchased before the winter or early spring are the favourite golden-rayed Lily (*Lilium auratum*) and the Japanese *Lilium speciosum*. Japanese bulbs of the white Trumpet Lily (*Lilium longiflorum*) also arrive at the same time, though bulbs grown in Bermuda can be purchased earlier.

Lilium auratum is a stem-rooting Lily, and the bulbs ought to be set about 5 inches deep. It is not such a good perennial as the other kinds, being apt to dwindle after the first year or two. The finest varieties are *platyphyllum*, white marked with crimson, and *virginale*, white marked with yellow.

The Japanese *Lilium speciosum* is much more reliable, and will live for many years. As roots form at the base of the stems the bulbs should be covered with about 5 inches of soil. The finest varieties are *Melpomene*, white marked with crimson, and *rubrum magnificum*, both heavily marked with crimson,

and Kraetzeri, a beautiful white flower.

The White Trumpet Lily (*Lilium longiflorum*) is better suited to cultivation in pots than out of doors, where it is not usually long-lived. The best varieties are *eximium* and *giganteum*.

It is not wise to prophesy as to the way Lilies will grow in gardens; they thrive far better in some than in others. Take *Lilium auratum*, for example; in many gardens it is not a long-lived plant. It does well the first year and blooms splendidly, yet the following year it may dwindle, and the year afterwards it may not start into growth at all. Yet, on the other hand, in some gardens, especially in those where the soil is light or well-drained loam and leaf-mould, and contains stones, which retain a good deal of moisture in the hot summer weather, *Lilium auratum* has proved itself a good perennial. Year after year it sends up strong stems, which increase in vigour annually, and the plants are a magnificent sight when in full bloom. The secret of success appears to be moisture at the root, though it must not be stagnant moisture, as is generally present in heavy clay soil. This kind, in common with many other Lilies, appreciates shade from the hottest sunshine, and a partially shady place may be chosen with advantage.

Care should be taken in choosing sites for Lilies; they dislike being disturbed. If they are in suitable soil and in the right position, they will flourish and increase if left alone.

Although the Lilies already described are some of the most fascinating and most easily managed,

there are others which are suitable for planting in amateurs' gardens. One of these is *Lilium Batemanniae*, which reaches a height of about 3 feet and bears flowers of rich apricot shade.

The most magnificent of all Lilies is *Lilium giganteum*; this reaches a height of 10 feet and bears immense, fragrant, white, trumpet-shaped flowers. Unfortunately it does not bloom until the bulbs are well developed, and the bulb dies after flowering. Offsets or small bulbs, however, develop, and these can be grown on until they reach flowering size. The conditions which suit this Lily best are moist leafy soil in open places in the woodland garden; the light shade and deep moist soil meet its needs perfectly.

Lilies are admirable plants to grow in pots. The best for this purpose are *L. auratum*, *L. tigrinum*, *L. longiflorum*, *L. regale*, and *L. speciosum*. The bulbs are potted in February, covered with fibre, kept moist, and placed in a frost-proof greenhouse. The bulbs are only just covered with soil, the pots being filled when the fresh shoots are 5 to 6 inches high. This top-dressing will benefit those Lilies which bear roots at the base of the stem as well as below the bulb; it should consist of rich loamy soil. Pieces of old turf about the size of a walnut with the addition of a little leaf-mould and well-decayed manure make an ideal top-dressing. During the summer months Lilies in pots may be grown out of doors, preferably in a position that is shaded from the midday sunshine. Great care must be taken that the soil in the pots does not become dry. The bulbs should be potted in 6-inch or 7-inch pots.

CHAPTER 26

Ferns for Garden and Greenhouse

THERE are three distinct classes of Ferns: hardy, temperate, and tropical. These notes are concerned with the first two, for very few hothouse Ferns are grown nowadays.

Before dealing in detail with the various sections a few general observations are necessary. Ferns are moisture-loving and shade-loving plants. This, however, does not mean that they do not require light or will not thrive in open positions. A certain amount of light is necessary; it is the brilliant and drying heat of the sun which should be avoided in selecting positions for Ferns.

Suitable Soil. The question of suitable soil for both hardy and greenhouse Ferns is not an important one. Hardy Ferns will grow in most cultivated garden soils if they are improved by adding plenty of leaf-mould and a little peat if available. In both heavy and light soils a few boulders should be arranged among the Ferns, giving the border or bank an uneven surface and forming pockets and bays in which the Ferns can be tastefully disposed.

The soil for Ferns in pots is not difficult to provide. They are not like many flowering plants which we must feed up with manures, etc.,

to get the best flowers; numbers of plants are discarded when the blooms are over and more are grown from cuttings or seeds. It is rather different with Ferns; they go on from year to year producing their beautiful fronds. Some die off before winter and push up fresh ones in spring; others go on from year to year, the plants being always a beautiful green. Just ordinary loamy soil with plenty of leaf-mould and coarse sand added forms a suitable mixture. It is so much the better if a little peat can be added, particularly for the Davallias and Polypodies.

Ferns for the Greenhouse. To grow a selection of Ferns in the greenhouse a minimum night temperature of about 45 degrees should be maintained, rising 5 degrees or more by day, and more still when the outside temperature is higher, and it is possible to ventilate freely. A greenhouse or glass porch is frequently attached to a house with seldom a thought of so placing it that plants grown there may get plenty of sun. Hence the woes of plant lovers who complain that few flowering plants thrive in their shady greenhouses.

But such conditions are often ideal for Ferns, though, of course, one is able to grow also *Liliums*,

Fuchsias, Campanulas pyramidalis and isophylla, Tuberous Begonias, and Clivias in summer, with Freesias, Hyacinths, Daffodils, Tulips, and other bulbous plants in winter and spring. What a delightful setting the Ferns make for these flowering plants.

The Best Greenhouse Ferns. The following twenty-five Ferns comprise a varied and interesting selection for the beginner's heated greenhouse :

Adiantum cuneatum (Maiden-hair), *Pacotti* (Buttonhole Fern), *Mariesii*, *capillus veneris*, and *formosum*.

Asplenium biforme, *bulbiferum*, *Hillii*, and *Nidus* (Bird's-nest Fern).

Aspidium (*Cyrtomium*) *falcatum*, and *Fortunei* (Holly Fern).

Davallia canariensis (Hare's Foot), *Mariesii* (Squirrel's Foot).

Dicksonia antarctica (Tree Fern), a tall, vigorous plant of imposing appearance.

Nephrolepis (Ladder Fern) *exaltata*, *Marshallii*, *Rochfordii*, and *todeaoides*.

Platycerium alcinorne (Stag's Horn).

Polypodium aureum (Golden Polypody).

Pteris (Ribbon Fern) *cretica*, *albo-lineata*, *cristata*, *Childsii*, *tremula*, *Wimsetti*.

The Best Hardy Ferns. As a list of good hardy Ferns to form the nucleus of a collection for the beginner's cold greenhouse the following may be mentioned :

Asplenium filix-foemina (Lady Fern), and the varieties *plumosum*, *plumosum Axminster* var., *plumosum divaricatum*, *polydactylum*, *setigerum congestum cristatum*. The old name for the Lady Fern is

Athyrium, by which it is still known in many gardens.

Aspidium aculeatum (Shield Fern), and the varieties *cristatum*, *cristato-gracile*, *angulare cristatum*, *angulare dissectum*, *angulare proliferum*. This Fern is known also as *Polystichum*.

Nephrodium filix-mas (Male Fern), and its varieties *cristata*, *polydactyla*, *propinqua crispa*, *pseudo-mas cristata* (King of Male Ferns), and *dilatata grandiceps*. Another name for this section is *Lastrea*.

Scolopendrium vulgare (the Hart's Tongue Fern), and varieties *crispum*, *crispum fimbriatum*, *cristatum*, *cristatum Kelwayi*, *cristulatum*, and *ramo-cristatum*.

There are very few gardens where hardy Ferns cannot be grown successfully. Many Ferns will grow in sunshine, but the majority do even better in shade. Neglected corners and bare ground, said not to be suitable for flowers, will often prove ideal for Ferns. The list given of Ferns for the cold greenhouse is also suitable for out of doors.

The hardy Ferns are most attractive plants for shady borders and for odd corners in the garden which are not suitable for flowering plants. They will thrive even in heavy soil if leaf-mould and sand are dug in freely before the Ferns are planted. During the summer months it is necessary to keep hardy Ferns thoroughly moist at the roots. It is a good plan to mulch them with decayed manure and leaf-mould when fresh growth is beginning in spring. This helps considerably in keeping the soil moist in dry weather and ensures vigorous growth. The dead fronds should not be cut off in autumn when they have faded.

CHAPTER 27

The Pergola and Garden Arches

IN suitable gardens a well-made and properly situated pergola, covered with various climbing plants, is certainly attractive, but most of us have come across instances where a pergola has practically spoilt the garden. One of the commonest faults in small gardens is to erect a short pergola which leads to nothing, whereas it should be a covered walk leading to something definite. For instance, it can be well employed between the flower garden and the Rose garden. Of course, in small gardens it is quite permissible to have some feature at the end of the pergola ; it may be only a secluded arbour.

Another important matter is to make the pergola substantial. Iron is often employed, and while it has the advantage of lasting, plants seldom do so well on it as on wood. Canes can be secured to the iron, however, and the growths tied to these, but where rapid-growing climbers are employed it will be a task to keep them away from the iron. This method, however, can very well be followed where Roses are grown.

Failing iron, wood must be used ; it looks well when properly erected. Obtain stout, sound posts for the uprights ; do not mind if they appear rather large and clumsy. It must be remembered that they

have to last many years ; and when the pergola is well clothed the foliage will resist gales better. Choose the posts from the harder woods, such as oak and chestnut. Larch is often used for the framework, and it usually answers the purpose well. The upright posts should be placed closer together if the wood used for the top is not very stout ; otherwise the long span may cause them to snap in the middle.

The bark is often left on the wood for the sake of appearance, but as it always peels off eventually it is well to remove it in the first place. The bottom 2 feet or so of the posts need treating with some preservative a few days before they are put in. Many people are afraid to use creosote, but it is seldom harmful if it is applied some time beforehand ; it then dries in thoroughly. Tar, however, is a good substitute. Several coats should be given if possible, each one being allowed to dry properly, especially the last.

Great care must be taken to see that the uprights are deep enough in the soil to be steady, not leaning one way or another, as these are the foundation of the structure. Pergolas are often smothered in growth, the plants being allowed to run wild. If more climbers are planted to begin with than will

eventually be wanted, remove them when the time comes, so that those left have ample space.

In many gardens, particularly small ones, a pergola cannot be properly introduced, but in such cases a few arches may usually be erected instead, and, when suitably clothed, they will prove very attractive, especially if a little care is taken to place them in suitable spots. The garden arch may be made of iron, covered with wire-netting, or of wood in rustic form according to taste ; but most plants prefer wood, as iron becomes hot in the summer and very cold in winter. The top of the arch may be flat, rounded, or sloping to either side from the centre.

In exposed gardens provide strong supports, and let these well into the ground, 2 feet at least, as the wind has great power over an arch when it is thickly covered with growth and foliage. Some of the cheaper arches sold nowadays are very flimsy, and will need two good posts on each side to keep them secure. A mistake usually made is to have arches only a foot or so wide. For a vigorous climber, such as a rambling Rose, this is not sufficient space. Make them twice this width if they are to be really effective. A height of 7 feet out of the ground will be sufficient.

The plan of erecting arches to take previously-planted climbers is not recommended, as the roots are bound to be damaged, but the plants can be put in immediately the arch is finished. It is advisable to treat the parts of the supports that are below ground with some wood-preservative. Oak, larch and chestnut furnish suitable posts.

There is a wide selection of climb-

ing plants suitable for growing on arches, and, where the extent of the garden admits, an interesting variety can be employed. Roses will, of course, occur to everyone. Practically all the *Wichuraiana* and climbing *multiflora* varieties are suitable, but it should be remembered that the former, of which Dorothy Perkins is a typical example, are very free-growing, and should therefore be used only where they can be given ample room. The climbing Roses proper, such as the old *Gloire de Dijon*, may also be employed. It is necessary to remove old stems annually from the *Ramblers* and *Wichuraianas*, and train in the young growths, otherwise the Rose trees will become overcrowded and much less satisfactory. A point that should not be overlooked is that some of these Roses flower earlier than others ; therefore they should be so arranged that the longest display possible is assured.

Other climbers include *Clematis*, *Honeysuckle*, *Jasmine*, *Wistaria*, *Polygonum baldschuanicum*, the *Passion Flower*, the *Common Hop*,* *Eccremocarpus scaber*,* and the *Flame Flower*, *Tropæolum speciosum*.* Those marked with an asterisk die down to the ground in autumn (so does the *Passion Flower* in most districts), but they are often used for the pergola.

Of annual climbing plants which may be used as temporary coverings for garden arches and trellis there are *Canary Creeper*, climbing *Nasturtium*, *Coboea scandens*, and the annual *Convolvulus*. The seedlings should be raised under glass and planted out of doors in May in soil which has been well dug and enriched with decayed manure.

CHAPTER 28

Flowering Trees and Shrubs

FLOWERING trees and shrubs provide such a wealth of blossom in spring and summer that room ought to be found in every garden for a few sorts. It is, however, useless to plant them unless they have plenty of space for development ; if they are crowded, hard pruning will become necessary, and that may result in a poor display of bloom.

Of the flowering trees few are lovelier than the ornamental Crabs, which are laden with pink or white flowers in spring. The Japanese Crab named *Pyrus floribunda* is one of the best ; its crimson buds and pink blossoms are very beautiful in May. The crimson Crab (*Pyrus atrosanguinea*) is very striking and provides a brilliant mass of colour ; the pale *Pyrus Schiedeckerii* and the Siberian Crab, of which the fruits make excellent jelly, are also to be recommended.

Flowering Cherries. The Japanese ornamental Cherries are particularly charming in April. Perhaps the most attractive of all is one named *Hizakura*, which bears a profusion of double pink blossoms. *Prunus serrulata* and the double *Gean* (*Prunus avium* fl. pl.) are two of the best white-flowered Cherries.

The Snowy *Mespilus* (*Ame-lanchier canadensis*) has white flowers in spring and prettily autumn-tinted leaves. The orna-

mental Peaches, varieties of *Prunus persica*, are exquisite flowering trees. One of the best varieties is named *Clara Meyer*, which bears double rose-coloured blooms.

The Laburnum is scarcely surpassed for grace and rich colour in early summer. Some varieties have longer flower bunches than others ; two to be recommended are *Watereri* and *Vossii*. The red, pink, and white Thorns are handsome ; they should be grown as standard trees. The bronze-leaved Plum (*Prunus Pissardii*) is one of the most popular garden trees. Its bronze purple leaves are attractive from spring until autumn, and in spring the small, pale plum-like flowers are an additional delight.

Winter and Spring-flowering Shrubs. By planting a suitable selection of flowering shrubs it is possible to have one or another of them in bloom in every month of the year, and no garden can afford to dispense with the best of them. In midwinter the Chinese Witch Hazel (*Hamamelis mollis*) bears its fragrant, pale yellow flowers on leafless branches, and at that season the *Laurustinus* (*Viburnum Tinus*), an evergreen with pink buds and white flowers, is in full beauty. Then also the winter Jasmine (*Jasminum nudiflorum*) opens its yellow, sweet-scented flowers on a sunny wall. Soon afterwards the

winter Heath (*Erica carnea*), which grows only about 8 or 10 inches high, provides a carpet of reddish purple bloom, shortly to be followed by the Mediterranean Heath (*Erica Darleyensis*), a taller plant with rose red blooms.

In March the white flowers of the Star Magnolia (*stellata*) are in full beauty, and in April the Golden Bell (*Forsythia spectabilis*) is laden with its yellow, bell-shaped blooms. *Forsythia suspensa*, which is of more slender growth, is suitable for planting against a wall.

Summer-flowering Shrubs. *Berberis Darwinii*, with orange yellow, and *Berberis stenophylla*, with yellow flowers, are two splendid shrubs of April-May. Of the *Deutzias*, *gracilis*, which bears white flowers, is one of the best. *Spiræa confusa*, its branches wreathed in small bunches of white flowers, is very beautiful.

Rhododendron is in bloom in May and early June, and *Azaleas* then provide a glorious display. Some of the best varieties of *Rhododendron* are : Pink Pearl, *Diphole Pink*, *Gomer Waterer*, bluish white ; *Doncaster*, red ; *Sappho*, white with dark spots ; *fastuosum fl. pl.*, mauve ; *Cynthia*, rose crimson.

The mountain *Clematis* (*montana*), which bears a profusion of small white flowers in May, makes a delightful display, and is suitable for covering a wall, trellis, arch or arbour. *Clematis flammula*, which is laden with small, cream-coloured flowers in late summer, is very rampant ; it will soon cover an arbour. That remarkable Russian plant named *Polygonum baldschuanicum* is a most vigorous climber which may be allowed to trail over an evergreen tree or used to cover a shed, trellis or arbour ; its bunches

of cream white flowers are borne in such profusion as almost to hide the leaves in early summer, and blooms are also produced later.

Ceanothus, a blue-flowered shrub popularly called Californian Lilac, is just the thing for a sunny wall. One named *Veitchianus* is a great favourite ; it is in full beauty in May. Other kinds, also with blue flowers and suitable for planting against a wall, are *divaricatus* and *papillosus*. The *Ceanothus* named *Gloire de Versailles*, which bears blue flowers in late summer, is a splendid shrub for amateurs' gardens ; it may be planted in the open garden or against a wall. If in the open it should be hard pruned in spring.

The Mock Orange or *Philadelphus* (often miscalled *Syringa*, the botanical name of the Lilac) is one of the finest flowering shrubs of early summer. The common kind, *Philadelphus coronarius*, which will grow into a large bush 10 feet or more high, bears white fragrant flowers. Many new crossbred kinds have been raised. One of the most beautiful of these is named *Virginale* ; it grows 6 feet or more high, and bears double white flowers in profusion.

The Lilacs are favourite early-summer flowering shrubs of which there are varieties with single and double blooms. Some beautiful single varieties are *Marie Legraye*, white ; *Charles X*, rose purple ; and *Souvenir de Louis Spath*, rose crimson. Double-flowered Lilacs are *Alphonse Lavallée*, rose ; *Charles Joly*, reddish ; and *Madame Lemoine*, white. Care must be taken to uproot all suckers—shoots from the stock or root on which the named Lilac was grafted—and to thin out the young shoots in early

summer. Standard Lilacs are easily managed and bloom freely.

Bush Honeysuckle (*Diervilla* or *Weigela*) is in full bloom in May and June. The common kind is *Diervilla rosea*, with rose-coloured blooms. The variety *Eva Rathké* has crimson flowers.

The Brooms (*Cytisus*) are very beautiful in late spring and early summer and thrive exceptionally well on light land. Some of the best are : *Cytisus albus*, white ; *praecox*, cream ; *Dallimorei*, rose red ; *scoparius*, the common wild Broom ; *Dorothy Walpole*, rose and crimson ; and *Fire Dragon*, scarlet and yellow. Small plants, grown in pots, should be planted in autumn or spring. After flowering, the shoots should be trimmed ; but severe pruning—cutting back to the “old wood”—is harmful. Of the nearly related *Genista*, *hispanica*, the Spanish Broom, is a free-flowering small bush, with yellow blooms in summer ; *cinerea*, 8 feet, and *aethnensis*, 12 feet, both have yellow flowers in summer. All these *Genistas* flourish in light land.

The Guelder Rose or *Viburnum* is a handsome summer-flowering

shrub. The finest is *Viburnum plicatum*, which bears large rounded white blooms in profusion. *Viburnum fragrans*, with white sweet-scented flowers in winter, is suitable for planting out of doors in a sheltered place.

Of shrubs which bloom in late summer the best are *Tamarix pentandra*, a beautiful rose pink Tamarisk which should be pruned hard in spring ; *Hypericum Henryi*, a small bush with yellow flowers ; *Ceanothus Gloire de Versailles*, blue, and *Ceanothus Ceres*, pink ; *Hydrangea paniculata grandiflora*, with large bunches of cream white flowers ; *Spiræa Lindleyana* and *Aitchisoni*, vigorous bushes which bear cream and white flowers respectively ; the mauve *Buddleia variabilis magnifica*, which attracts the butterflies and bees.

All these trees and shrubs will flourish in ordinary well-tilled soil enriched with manure. It is an advantage to mix peat with the ground before planting *Rhododendron*, *Azalea* and *Heath*, but they will thrive in ordinary loamy soil which is free from lime.

CHAPTER 29

Ornamental Evergreens

THE deciduous, or leaf-shedding, trees and shrubs predominate in most gardens. It is, however, desirable to have a sprinkling of evergreens among them for winter effect alone. A garden looks very bare in winter without a few evergreen trees and shrubs; when the planting of a screen or shelter belt of trees is proposed evergreens are indispensable.

Mention must be made of several evergreen trees which provide us with most useful and attractive ornamental hedges. The Holly, Yew, Box, and Cherry Laurel have special value in the garden and pleasure grounds. Many evergreens are also beautiful flowering shrubs, notably Rhododendron, Ceanothus, Escallonia, and Cistus. The introduction of a few Bamboos into a garden gives a distinct, pleasing and sub-tropical character. The best to begin with are *Arundinaria fastuosa*, 20 to 25 feet; *Phyllostachys nitida*, 10 to 15 feet, very elegant (has been named the Queen of Bamboos); *Phyllostachys nigra*, 12 to 15 feet; and *P. viridi-glaucescens*, 10 to 15 feet.

Arbutus and Aucuba. The easiest method of reviewing the wide range of ornamental evergreens is to refer briefly to the most important groups in alphabetical order. *Arbutus Unedo*, or Straw-

berry Tree, is a tall, shiny-leaved shrub or small tree, bearing its white flowers in autumn and strawberry-like fruits the following autumn. The Japanese Spotted Laurel, *Aucuba japonica*, is the best tall evergreen shrub to plant beneath trees, and does well in town gardens.

Berberis stenophylla, with rich yellow flowers, and *B. Darwinii*, orange-yellow blossoms, are indispensable spring-flowering bushes in shrubbery borders, and both make excellent ornamental hedges, from 5 to 8 feet high. The Mahonia, *Berberis Aquifolium*, with large, holly-like leaves, is largely grown to cut for winter-foliage decoration. The plants thrive in sun or shade, beneath all trees. The Common Box, *Buxus sempervirens*, and its numerous varieties, deserve special attention in gardens with chalky soils, though they thrive quite well in lime-free ground.

The hardiest evergreen Californian Lilac is *Ceanothus thyrsiflorus*, a tall bush 12 feet or more in height, covered with light blue flowers in May. *Choisya ternata*, the Mexican Orange Flower, gives sweetly scented white blossoms most of the summer, on bushes from 5 to 6 feet tall. For a hot, sunny border of light soil plant the Rock Roses, including *Cistus laurifolius*, *C.*

cyprius, *C. ladaniferus*, and *corbariensis*, which have white or spotted flowers, and the large purplish crimson *C. purpureus*.

The introduction of numerous Chinese *Cotoneasters* has more than doubled the value of this family for garden borders. Good ones are: *C. buxifolia*, *C. horizontalis*, *C. microphylla*, and *C. rotundifolia*. The *Escallonias* are best known for hedge planting, but *E. Langleyensis*, *E. Ingrami*, and *E. Balfouri* are hardy and free-flowering bushes in most garden borders.

The Holly, *Ilex Aquifolium*, provides gardens with many green and variegated-leaved shrubs. *Hodginsii* is one of the best green-leaved sorts. Among the best variegated sorts are *regina*, *Golden King*, *argentea regina* (Silver Queen), *argentea pendula*, and *Handsworth Silver*.

Evergreen Honeysuckle and Daisy Bush. The Common Bay, *Laurus nobilis*, is a good town shrub to grow in tubs. The Evergreen Bush Honeysuckle, *Lonicera nitida*, is ideal for hedge planting. The hardiest New Zealand Daisy Bush is *Olearia Haastii*, which has quantities of white flowers in August. *Osmanthus Delavayi* is a sweet-scented, white-flowered shrub of comparatively recent introduction from China.

The Fire Thorn, or *Pyracantha Lalandei*, is most familiar as a wall shrub, but is also very good as an ornamental bush. Two new kinds from China are *Yunnanensis*, with smaller red fruits hanging on the bushes far into the new year, and *Rogersiana*, with smaller leaves, and crimson, orange, or yellow fruits. The Evergreen Oak, *Quercus Ilex*, is one of the best evergreen trees for southern gardens, a tall

shelter tree, and a useful hedgerow bush.

Rhododendrons are the most beautiful of evergreen flowering shrubs. Of the numerous named sorts every collection should contain *Pink Pearl*, *Mrs. E. C. Stirling*, *Alice*, *Lord Palmerston*, *Loder's White*, *Doncaster*, *Cynthia*, and *Snowflake*.

The Veronicas, or Shrubby *Speedwells*, have increased much in popularity during recent years, and for small, sheltered gardens are very good flowering bushes. The hardiest, with white blossoms and small leaves, is *V. Traversii*. Those with large flower spikes, forms of *V. speciosa*, are *Purple Queen*, *Simon Delaux*, crimson; *Diamant*, dark crimson; and *Gloriosa*, pink.

The Conifers, or cone-bearing trees, supply gardens with many of the most beautiful and distinct of evergreens. For ornamental lawn specimens they are unsurpassed. Several are very good as wind-breaks, and a number can be planted usefully and effectively as hedges. Most Conifers grow quite well in comparatively poor soils. Very few, however, are good town trees; the majority develop and retain their full beauty only in the pure country air, free from smoke and chemical fumes.

The beautiful Silver Fir (*Abies Pinsapo*) is a native of Spain. It is a very striking and handsome tree, thriving particularly well on chalk soils. Other good Silver Firs are *A. brachyphylla*, *A. grandis*, and *A. Nordmanniana*. The Spruce Firs are also very satisfactory on chalk soils, the best known being the *Blue Spruce Fir*, *Picea pungens glauca*. *P. omorica*, the *Servian Spruce*, is distinct, and forms a beautiful pyramid.

CHAPTER 30

Shrubs Easily Increased by Cuttings

A LIST of the best shrubs, of which cuttings may be inserted during late July or August in pots of sandy soil in a frame or out of doors in October, is as follows:

The Golden Bell bush (*Forsythia suspensa*), which makes a beautiful climber, and the sturdy-growing bushy variety *spectabilis*. My choice of the best five kinds of Mock Orange (*Philadelphus*) would be *Virginale*, large double flowers; *Voie Lactée*, very large single blooms; *microphyllus*, a dwarf bush, deliciously fragrant flowers; *Lemoinei erectus*, a neat upright shrub; and *coronarius*, the common tall Mock Orange.

The Bush Honeysuckle (*Diervilla* or *Weigela*) increases freely from cuttings, and is a particularly useful shrub for moist soils and the water-side. The evergreen *Ceanothus*, or Californian Lilac, is a good wall shrub, and of the bushy sorts valuable in late summer and autumn the best known as *Gloire de Versailles*, *Perle Rose*, *Indigo*, *Marie Simon*, *Ceres*, and *Arnoldii*.

For warm, sheltered gardens the varieties of *Deutzia gracilis* are useful white-flowered shrubs. Following these, in early summer, are *Deutzia discolor major*, *longifolia*, *Veitchii* (with large pink blossoms),

scabra, and the double white variety *candidissima*.

Prunus triloba flore pleno, with double rosy pink blossoms, is one of the showiest shrubs in early April; it is valuable both as a bush and wall-climber.

The Flowering Currant (*Ribes*), *Spiraea*, *Viburnum*, *Potentilla*, and *Hypericum*, all may be increased readily and rapidly by cuttings. This is also the usual method of propagating two other important allied families, the Sun Roses (*Helianthemum*) and the Rock Roses (*Cistus*). For sunny gardens with dry soils, for large rockeries and sunny banks, these two plants should be cultivated in considerable numbers; they differ widely in height and habit, and the flowers are of many pleasing colours. These are some of the best *Cistus*: *corbariensis*, *cypricus*, *ladaniferus*, *laurifolius*, *Loreti*, and *purpureus*. Among *Helianthemums*, in addition to the varieties of *vulgare*, there are *alpestris*, *formosum*, *halimifolium*, *libanotis*, and *ocymoides*.

Among our best evergreen flowering shrubs the *Escallonia* claims particular attention for walls and fences. In the south and west this shrub is frequently and successfully planted as a hedge. The following quickly grow into large bushes for

shrubby borders and screens: Balfouri, Donard Seedling, Edinense, Langleyensis, rubra, and Ingrami.

There are two ways of dealing with cuttings of shrubs. What are known as half-ripe cuttings—those which are moderately firm or woody—can be taken in July and August, and inserted in pots of sandy soil, or a bed of similar material in a cold frame. The frame must be kept closed, except for a slight daily airing, until the cuttings have formed roots; this will take 5 or 6 weeks as a rule. Meanwhile, the cuttings must be syringed every day in hot weather. If this is done the soil will need little watering, providing it is well

moistened as soon as the cuttings are inserted. When the cuttings are rooted the ventilation is increased gradually.

The other way of propagating shrubs by cuttings is to set these out of doors in autumn, October or November. The hardy, leaf-losing kinds do best when treated in this way, but some of the common evergreens will also form roots. A narrow trench is dug and sand is scattered freely along the bottom. The cuttings are put in at about 6 inches apart, and half covered with soil, which must be made firm at the base of the cuttings. They should be left undisturbed for a year.

CHAPTER 31

Pruning Trees and Shrubs

THE correct pruning of trees and shrubs can be carried out only by those who have some knowledge of their habit of growth, flowering season, and other characters. In the absence of such knowledge more harm than good may be done.

The following may be cited as the four chief objects or main reasons for pruning trees and shrubs :

1. To develop a well-balanced and shapely tree or shrub, having in view its distinctive habit of growth and the position in which it is growing.
2. To improve the quality of the blossoms and to ensure a satisfactory display of them.
3. To aid in maintaining health and vigour.
4. The periodical removal of dead wood from old trees to keep them attractive as long as possible.

Opponents of pruning, and they do exist, may point to the natural beauty of a wood which, they say, is never visited by man with a chopper or saw. Such trees, planted fairly close together, hold one another up, as it were, and in the main keep a good leader. Looked at *en masse* the effect may be very good, but commence to examine each tree in detail and it will be found that the number of good specimens is not large.

The good effect of pruning is even more marked amongst shrubs. There is no comparison between two shrubbery borders, the one systematically pruned, the other allowed to grow at will; the coarse, strong-growing shrubs—which should only provide shelter and a setting for the choice ones—overcrowd and spoil the beauty of rare and less vigorous kinds.

It is possible to over-prune trees and shrubs, and thus to destroy their characteristic growth. A collection of trees and shrubs would be robbed of half its beauty and interest if all were pruned in exactly the same way to approximately the same shape and height.

Much harm is often done when the garden is "spring-cleaned" in February or March. Off come the shoots of the Mock Orange (*Philadelphus*), the Forsythia, the Diervilla (*Weigela*), and the Kerria, to say nothing of the Clematis montana on the house. Is it any wonder that the owner of a small garden decides to root out the shrubs because they do not flower freely? The correct time to prune these shrubs is immediately after flowering, not a short time before they should bloom.

Those who love their gardens and find in gardening the most engrossing and healthy of all recreations will discover that the subject

of pruning—how, when, and why to do this or that—is among the most interesting of garden “operations.”

Thinning Out. The term “pruning” is used here in its broadest sense, especially with regard to deciduous flowering shrubs. It includes not only the shortening of branches and twigs, but thinning out the branches—the removal of the old branches to make way for young ones, and limiting the number of new shoots, the object being to throw the vigour into a limited number, and thus to obtain better growth and flowers. Obviously, if the number of branches on a tree is regulated so that light, air, and sun reach them the growth must be vastly improved. With certain kinds of trees the pruning and thinning of branches is done chiefly while they are young. Too much stress cannot be laid on the necessity of a good beginning. Many flowering shrubs require pruning more or less throughout their lives.

It is obvious that the old practice of doing all the pruning required in a garden during one or two weeks when tidying up the beds and borders as winter gives place to spring is entirely wrong. A large number of trees and shrubs require no regular pruning, but it is fairly safe to say that all trees and shrubs during their early years of growth benefit by at least a little thinning of the shoots, shortening of the branches, or training of the leading shoot. It is a great mistake to neglect pruning for five years or more and then have a real good “set-to.” A considerable number of flowering shrubs only give the best results when they are pruned

or the growths are freely thinned annually.

In a garden of fair size the pruning of trees and shrubs may be said to be more or less continuous throughout the year. Certain kinds are best pruned in winter or during early spring, others, which include the Forsythia, the Philadelphus, and Kerria, should be pruned and thinned as soon as the flowers fade.

Though these remarks point to the necessity of pruning being done with considerable thought and care, as the grower becomes familiar with the various trees and shrubs cultivated he will find the art of correct pruning and thinning no more difficult than, and quite as interesting as, other phases of gardening.

Pruning should begin while trees and shrubs are young. Neglect to pinch off a few shoots with the thumb and finger may in later years mean sawing off large branches.

Pruning Trees. The pruning of large-growing trees is deserving of much more attention and consideration by cultivators. Too often they are planted and left to grow without any thought of what they will be like in ten, twenty, or more years. Close planting tends to the development of tall, slender growth, with the leader drawn upwards in the struggle for light. This is a condition favoured by growers of timber, as the lower branches fall away when young, leaving no knots or scars in the wood. In planting ornamental trees ample space must be allowed for their development. The general tendency of isolated trees is to develop laterally rather than in an upright direction.

To obtain good specimen trees, with stately trunks and well-balanced branches, pruning should commence when the trees are young. The beginning in the nursery usually consists of pinching out the points and cutting out small shoots to give ample space for the selected few to develop. It is a common practice to cut off the lower branches to form a clean trunk quickly, but a much better result is obtained by leaving a few side branches to feather the trunk for a few years. If these are kept rather closely pruned they help materially in the development of the trunk, but do not increase much in size, so that when cut off there are only comparatively small wounds to heal over.

Early thinning and training of young trees should do away with the necessity for the removal of large branches in later years. Equally important is it to remember that a tree with well-balanced branches is less likely to suffer damage during gales.

In pruning, do not attempt to destroy the individuality of a tree. The Tulip Tree, the Maidenhair Tree, and the False Acacia (*Robinia*) are naturally more or less upright in growth. Consider, when pruning, what a contrast these provide in the pleasure grounds to the wide-spreading Catalpa, the Horse Chestnut, and the Manna Ash (*Fraxinus Ornus*).

Training a Central or Leading Shoot. One of the first and most important considerations is the training of a healthy growth as the central or leading shoot of the tree. This is destined to become the trunk in later years. Having selected the healthiest and most

convenient central shoot, all rival growths should be shortened, or entirely removed. Young trees supported with stakes may at times, especially when leafless, look unnatural, but as stakes may make just the difference eventually between a crooked and a straight trunk, their temporary support must be looked upon as essential.

Sometimes a leader develops an unusual length in one season, and has no side branches. Matters can be balanced by shortening the shoot to half or even one-third its length. This will cause the development of several other growths, the best one of which can be selected to become the new leader of the tree, the others being "topped" when perhaps 6 inches long, or entirely removed if there are too many.

A common mistake is to leave a considerable number of branches on the larger growing trees when young. Remember that the side branches continue to produce their quota of new shoots each year, and will eventually become very large, requiring ample space for development. The remedy is to remove those branches not required, but it necessitates leaving a wound on the main trunk. If, however, the cut is made with care, and dressed with tar, the wound will eventually completely heal over on healthy trees.

Occasionally the leader of a tree may be broken or damaged by accident. On deciduous trees a suitable side growth near the top can usually be found to tie in position as a new leader. If one is not available for the time being, cut the broken shoot clean out and await the development of a new one.

The majority of specimen trees

growing in an open position do not attain their normal height unless the growth of the side branches is checked. By encouraging the development of the leading shoot and regulating the development of the side branches, trees are encouraged to attain their normal maximum height.

Some trees naturally fork or divide into several main branches low down on the trunk. It may be taken as a good general rule to encourage the development of a single trunk to a good height. Not only is it more imposing, but it is not unlikely that in a gale one of several large limbs on a low-forked tree, which in time become excessively heavy, may break off.

An enthusiast coming into possession of a long-neglected garden probably finds numerous trees which have been left unpruned for years. Severe treatment is necessary, though the trees may look rather disfigured for a year or two.

When to Prune Trees. From the foregoing remarks it will be apparent that the main business of pruning and thinning the growths of trees is the encouragement of certain selected branches and the checking or suppression of others to build up evenly well-balanced specimens.

The pruning of young and old trees may be carried on during eight months of the year. The four months when pruning is not desirable are February, March, April, and May. During this period the sap is very active, and many trees "bleed" freely if the wounds made by pruning are of any size. Birch, Walnut, the *Prunus* family, and Maple are among the most susceptible.

Pollarded and Coppiced Trees.

In pollarding, the young branches are cut back to a desired height, usually about 10 feet or thereabouts. The Willow is the tree most frequently pollarded. Coppiced trees in woods, and Willows in damp ground, are cut down to the base. How often the branches are cut down depends on the size of the stakes required. Close coppice planting and cutting encourage the growth of straight poles. Ash, Hazel, Sweet Chestnut, and Willow are the trees most frequently coppiced. The young Willow rods are cut every year for basket-making. The Sweet Chestnut poles are split and used extensively for light fencing.

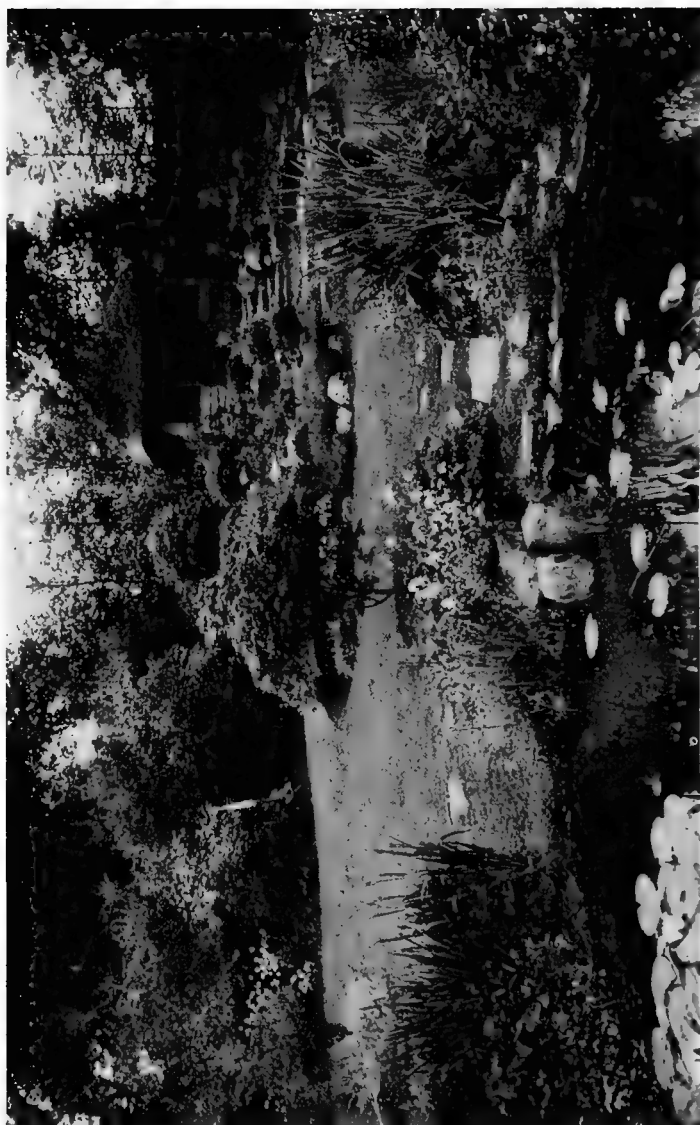
In meadows and park-land used for grazing it is necessary to remove the lower branches of trees to prevent damage by cattle. Nothing looks much worse than a tree with its lowest branches leafless and damaged.

Street Trees. In most positions where street trees are planted limited space necessitates much closer pruning and shortening of branches than is normally practised on trees growing in pleasure grounds and parks. The choice of trees suitable for street planting is limited, though it must be admitted that the London Plane is far too often planted. It is, however, certainly the best tree to withstand injury from the city smoke, and can be pruned more or less indiscriminately.

Street trees must have more than usually tall trunks; branches low down would interfere with traffic and pedestrians. When trees are allowed to grow tall in narrow roads, those in charge may expect



Persian Candytuft or *Aethionema*, a charming rock garden plant which bears rose-coloured flowers in early summer and will thrive in well-drained gritty soil



A Water Lily pool, its margin fringed with flowering plants, adds to the charm of the garden in summer.



A little formal garden near the house—a pool surrounded by grass and flowering shrubs.



A yellow Michaelmas Daisy named *Aster luteus* ; it grows into a plant 2 to 3 feet high and bears a profusion of small yellow flowers in early autumn.

to receive complaints from residents that the trees are obstructing light from the rooms, and probably making it impossible to grow flowering plants satisfactorily in the front garden. This means that the top, bottom, and sides of the trees have to be severely limited. Then follows the hard pruning often so severely criticised; but is there an alternative? When once the close framework of branches is formed, thinning and shortening, if done in alternate years, tend to keep the trees within bounds.

Under natural conditions of growth, without pruning, trees become crowded with branches. When some of these are cut out, dormant or latent buds often produce numerous small growths, which must be removed. The common Lime is one of the worst offenders in this respect; if left unpruned a tangled mass of thin, twiggy growths develops on the trunk. When this is cleared out there is usually an annual or biennial crop of other shoots to remove. It saves a lot of bother from this cause when clean cuts are made close back to the branches.

Pruning Hedges. No hard-and-fast rules are made with regard to the best times to prune hedges. The practice varies very considerably with the different shrubs planted as hedges, and the time selected for clipping or pruning may also be a matter of local convenience.

When such closely clipped evergreen hedges as Holly, Yew, and Box are pruned once only during the year this is best done in late summer, August, when growth for the year is practically completed. In town and suburban gardens

owners intent on keeping their Privet hedges neat and tidy clip them from May to August at intervals of four to six weeks. In bygone days our predecessors, who took so much pride in their topiary work, clipped their Yew, Box, and Holly hedges quite as frequently.

In country gardens there is nothing to equal the Quick or thorn hedge when this is closely clipped. It forms a very neat and impenetrable hedge when clipped twice during the season—in June and again during August.

It is practically impossible to prevent a hedge from increasing a little in size each year. Then there comes a time when hard pruning is necessary; perhaps once in five years, or oftener, the secateurs, or even a small pruning saw, must be brought into use, and the shoots are cut well back into the hard wood. April is the best time for the drastic pruning of Laurel, Privet, Holly, Yew, evergreen Oak, and other similar hedges. Though it probably means losing a season's flowers, April is also the best time to prune Rhododendrons and the large-leaved evergreen bushes severely.

Some shrubs cultivated for their flowers as well as the leaves are best pruned after flowering. Good examples are *Escallonia*, *Berberis stenophylla*, *Berberis Darwinii* and *Cydonia japonica*.

Tall hedges of Beech, Hornbeam, or Cherry Plum can be kept neat by annual pruning with shears in late summer.

Pruning Conifers. The pruning of conifers, or cone-bearing trees, differs in several ways from the pruning of flowering trees. If from any cause, owing to an

accident, or its destruction by insects, the leading shoot of the tree is destroyed, it is useless to tie up the nearest suitable side branch to form a new leader.

In *Abies* and *Picea*, for example, which are of very formal outline, with a well-defined central stem, the branches develop in more or less regular whorls or tiers. It is useless to tie up one of these side branches with the idea of forming a new leader, for it will grow one-sided and very slowly. The procedure necessary to obtain a new leader is to cut out the remains of the damaged one, then, usually near the top, one or more new shoots will push out from dormant or latent buds. The most suitable one can be selected for a new leader and the others removed.

The growth of *Thuya*, *Cupressus*, and *Tsuga* is different. In pruning these it is often necessary to shorten the numerous upright-growing side branches, which develop as potential rivals to the proper leader.

Care is necessary in shortening the side branches of *Abies*, *Picea*, and similar conifers. Always shorten close to a side branch or twig, making the pruning as little apparent as possible, for they have not the power to make new growth rapidly and recover, as have most flowering trees.

Half-dead branches, i.e., branches with many dead twigs near the bottom of the tree, should be cut clean out to the trunk; that is a better practice than merely cutting out the dead parts in the hope that they will recover.

Because of the large amount of resin and other substances in the wood of conifers, pruning should,

as far as possible, be done in late summer, autumn, and early winter, when the flow of sap, at least in developed trees, is not at its height. Though dressing of wounds with tar is to be recommended, there is little likelihood of disease attacking them, because the sap is in itself somewhat antiseptic; the sap possesses preservative qualities, for it is well known that the wood and branches of conifers do not decay readily.

When the pruning and thinning of trees has been carefully and systematically undertaken until they are of fair size, with a well-grown trunk, they may be left more or less to develop their natural shape and characteristic features. There are, however, exceptional circumstances. Something unforeseen may happen, such as damage by winds, certain branches may become unsafe, or it may be necessary to open up a view; in such conditions large branches have to be removed sometimes.

The dying back of old trees, Oak trees in particular, is a subject which the expert is asked to explain from time to time, and to suggest suitable treatment. The most probable cause usually is that the tree has absorbed a large proportion of the available plant food in the area covered by the roots, and, having attained its maximum development, it is unable to "pump up," as it were, sufficient nourishment to reach to the ends of all the branches.

The best treatment is to cut off the dead and unhealthy ends of the branches, pruning back to sound wood; to loosen the surface soil over the whole area under the tree, and just beyond the spread of the

branches, and to apply a dressing of turfy loam with which decayed manure and such useful fertilisers as bonemeal, wood ashes, and soot have been mixed.

When to Cut Off Large Branches.

When it becomes necessary to remove large branches, always endeavour to do the work in the autumn or early winter; October and November are the best months, when plant life is least active.

In practice it is found that there are two distinct types—soft and hard woods—with, of course, many intermediates. Examples of half a dozen soft wood trees are Birch, Horse Chestnut, Lime, Prunus, some Acers, and many of the conifers. Only cut large branches off these trees in late autumn and winter when it is absolutely necessary, and then dress the wounds with tar immediately. The best examples of hard wood trees are the Oak, Elm, Hornbeam, Ash, and Plane. These can be pruned with safety from the beginning of June until the end of January.

Always cut off a branch close back to the main trunk or to a healthy side branch, leaving no vestige of a snag or stump. When a piece is left on, if only a few inches long, it must inevitably die, as there is no growth at the end to draw up the sap. The dying back not only occurs at the end, but the decay extends right back into the main trunk or branch, causing a hole. When, however, the cut is made close to the main branch, it gives new bark a chance to grow gradually over the wound, especially on young, healthy trees, and, in fact, all those in full vigour. An Elm tree can almost always be relied upon to push out vigorous

new growths the following season when stumps are left after pruning; so, too, can the Plane.

Large branches should be removed in several pieces. The last piece cut off ought not to be very long, or in falling its weight may carry away a strip of bark from the trunk, or from the larger branch to which it is attached. To safeguard against this, cut through several inches of the bark and wood at the bottom with upward cuts before sawing through from the top. As an additional precaution, fasten heavy pieces of wood to a branch above with a rope so that the branch will remain slung in position when cut right through.

Too much stress cannot be placed on the desirability, one may even say the necessity, of making perfectly clean cuts and dressing the wounds or cut surfaces with an antiseptic. Various substances have been used, and are recommended from time to time—Stockholm tar, creosote, and styptic, or carpenter's knotting—but none equals coal tar from the gasworks—not the tar mixtures used as a surface dressing for roads, for they contain additional substances. Coal tar is at once an antiseptic dressing against fungous spores and a protective coating of the wood against the weather.

The practice of protecting large wounds by nailing on sheets of tin, zinc, or lead is wrong. What a splendid harbour or refuge they provide for insect and fungoid pests! All that is necessary is to renew the dressing or coating of tar when required, not more than once a year, until the new bark grows over and completely covers the wound. Only dress the cut sur-

faces, not the living bark, with tar.

Small cuts at the ends of branches are often passed over as not sufficiently important to dress with tar, but it is desirable to coat the cut end of branches the size of one's finger and larger, especially if the tree is a "soft wood"—Prunus, Birch, or Magnolia, for instance. The deadly coral spot fungus (*Nectria cinnabarina*) frequently starts on small branches, gradually working back, so that first of all branches die, and eventually the whole tree or bush perishes.

Insufficient attention is, as a rule, given to the removal of branches on large trees. Not only on the score of tidiness in appearance, but also for the general health of the trees, the latter should be looked over periodically for the purpose of cutting out dead wood.

The pruning of evergreen trees differs a little from that of deciduous trees. For example, the shortening, thinning, and general regulation of the branches is best done when new growth is about to begin in spring. The chief reason for this is that the sap is more or less active throughout the year, thus if pruning is done in autumn the tree will attempt to make new growth, which will be checked or possibly killed by frosts in winter. It is important to remove superfluous shoots and wrongly placed growths while they are small.

Holly and Yew are attractive trees for the lawn when only sufficient thinning and pruning of the branches is done to allow of the development of a pleasing outline.

How to Prune Shrubs. In the management of such a very large and varied collection of hardy

shrubs as we now cultivate in our gardens it is not surprising that the methods of pruning are diverse. Many shrubs do not require pruning, in fact are better without it, the Magnolia for example, but in practice it is found desirable to prune most shrubs at some period or other to make them suitable to the positions occupied, or to improve their shape.

The time of flowering provides a reliable guide as to the best time for pruning. Many shrubs flower on the current season's shoots, the remainder blossom on the shoots of the previous year. The second group is very much the larger and more important, and the flowers are produced chiefly during the first half of the year; in dealing with these, whatever pruning of shoots and thinning of branches is required should be done when the flowers fade, to allow as long a season of growth for the new shoots as possible. Six well-known shrubs that need this kind of pruning are *Forsythia suspensa*, *Prunus triloba* flore pleno, *Clematis montana*, *Kerria japonica* flore pleno, *Philadelphus Lemoinei* erectus, and *Deutzia gracilis*.

When to Prune. Shrubs that blossom on the wood or growths of the current year should be pruned between November and the end of February. Good instances of shrubs that need this treatment are *Hydrangea paniculata* grandiflora, *Spiraea japonica*, Anthony Waterer, *Buddleia variabilis*, *Hypericum Henryi*, *Ceanothus Gloire de Versailles*, and *Clematis Jackmanni*. During the development of the young shrubs only moderately hard pruning may be necessary, but when they have

attained the required size the previous year's growths may be cut back to within a few buds of the older wood. The harder the pruning, the stronger will be the new growths and the better the flowers.

A large number of flowering shrubs need thinning rather than pruning; superfluous shoots or branches are cut out so that those remaining may have space to develop, and that light and air may penetrate into the bushes. The spring-flowering *Spiræas*—among them *S. arguta* and *S. Thunbergii*—most of the Mock Oranges (*Philadelphus*), the shrubby Honeysuckles, the *Diervilla* or *Weigela*, and the *Escallonia* may be cited as examples.

Shrubs which give a certain amount of trouble in pruning are those cultivated for their attractive fruits. Notable examples are some of the *Barberries*, the wild *Roses*, *Pyracantha*, and the *Cotoneasters*. If these are pruned in winter or early spring, the bushes will probably produce few if any flowers, hence there can be no hope of a good display of fruits. If pruning is done after flowering, this removes the small fruits that are developing.

The best thing is to do a little thinning and shaping of the bushes in June, and about every fifth year to prune hard in early spring. This means the loss of a season's flowers and fruits, but instead there should be an abundance of vigorous new shoots to carry on the healthy life of the bushes.

In pruning and thinning shrubbery borders the bushes must be restricted to their allotted space. When the routine methods are not sufficient to keep them within

bounds, the pruning necessary to prevent the bushes outgrowing their positions is usually best done in spring, before new growth for the year begins.

When to Cut Back Overgrown Shrubs. There comes a time when shrubs which require no regular pruning either outgrow their positions or become very dense, unshapely, or overgrown. This calls for a vigorous cutting back of the old branches, with a corresponding thinning and shortening of the remainder. The large-leaved evergreen *Rhododendron* provides one of the best examples. It means the loss of a year's flowers, but it is wonderful how soon a *Rhododendron* bush recovers, provided, of course, that a fairly good foundation of stems exists to which the branches can be shortened, the older worn-out wood being removed down to the base if need be.

April is the best time to cut back old *Rhododendron*, *Laurel*, *Privet*, and *Phillyræa* bushes. The old cut stems may look ugly for a week or two, but dress them with tar immediately after pruning, and in a few weeks there should be a good crop of young growths.

Pruning Evergreen Shrubs. When evergreen bushes are cultivated entirely or for the most part for their foliage, spring as a rule is the best time for pruning. Just when new growth is about to begin is found to be the most satisfactory season, whether for cutting the stems hard back into the old wood because the shrubs have outgrown their space, or if it is simply a matter of shortening some of the longer branches to ensure shapely bushes.

It is worth while also to go round

with the secateurs during August when growth for the season is practically completed, shortening, or removing entirely, vigorous new shoots which may in time spoil the appearance of a bush or lead to its outgrowing the space available. When such work is neglected for a year or two it is surprising how soon a shrubby border becomes a mass of tangled growths.

Useful foliage effects can be obtained by severe annual pruning of, among other shrubs, *Ailanthus glandulosa*, *Paulownia imperialis*, and *Rhus typhina* var. *laciniata*. If cut down to the ground each year in early spring the shrubs produce very vigorous shoots with large handsome leaves. When each plant is limited to one stem quite a tropical effect can be obtained.

Pruning Climbers and Shrubs Grown as Climbers. The pruning of climbing plants, and shrubs cultivated as climbers, is one of the most important details of their cultivation. Practically all climbers require some pruning and training in order to keep them within bounds and to adapt the growths to whatever support it is intended they should cover.

A number, we will take the

Clematis and climbing Roses as examples, flower very much better when pruned and thinned annually, so that there is a frequent supply of young wood to produce plenty of blossoms.

In the case of shrubby plants grown against walls and fences, a good deal of pruning and training is necessary to change their habit of growth from bushy shrubs to upright-growing plants for the purpose of furnishing walls, fences, and other supports. Hence it will be readily understood why we must prune a shrub considerably when it is planted against a wall, yet in the open border little pruning, if any, might be required. It is a case of adapting the plants to conditions rather than pruning to increase the supply of flowers, though incidentally many such plants bloom better against a wall, presumably because they obtain shelter and the growths are better "ripened."

In a garden with one or two sheltered walls numerous shrubs that are scarcely hardy can be successfully grown even though they are not climbers in the strict sense of the word. Good examples are the Myrtle, Pomegranate, and Crinodendron.

CHAPTER 32

Making a Water Garden

ALL who have realised the beauty of Water Lilies and other aquatic and moisture-loving plants are filled with the desire to grow them. The questions of space and expense, the water supply and its exit, all require consideration, however, and many dismiss the subject of water gardening with a sigh of regret—they feel that the creation of such a scene as they have in mind is not within their power. Need it be so? This is a question the writer answers in the negative, and hopes to show that the amateur, if his land receives a fair amount of sunshine, may revel in the pleasures of a small water garden, even if it is only large enough to accommodate one or two Water Lilies.

Choosing the Site. Those having a streamlet flowing through the garden need have no difficulty in choosing a suitable site. Part of it may be widened and a bank erected to keep the water to the requisite depth. This point need not be elaborated, however, as few are fortunate enough to have a streamlet at hand; and the chief object of this chapter is to assist those who have no special water supply beyond that from the main or rain-water from the roof. Even an old-fashioned pump will suffice to keep a small water garden supplied. It

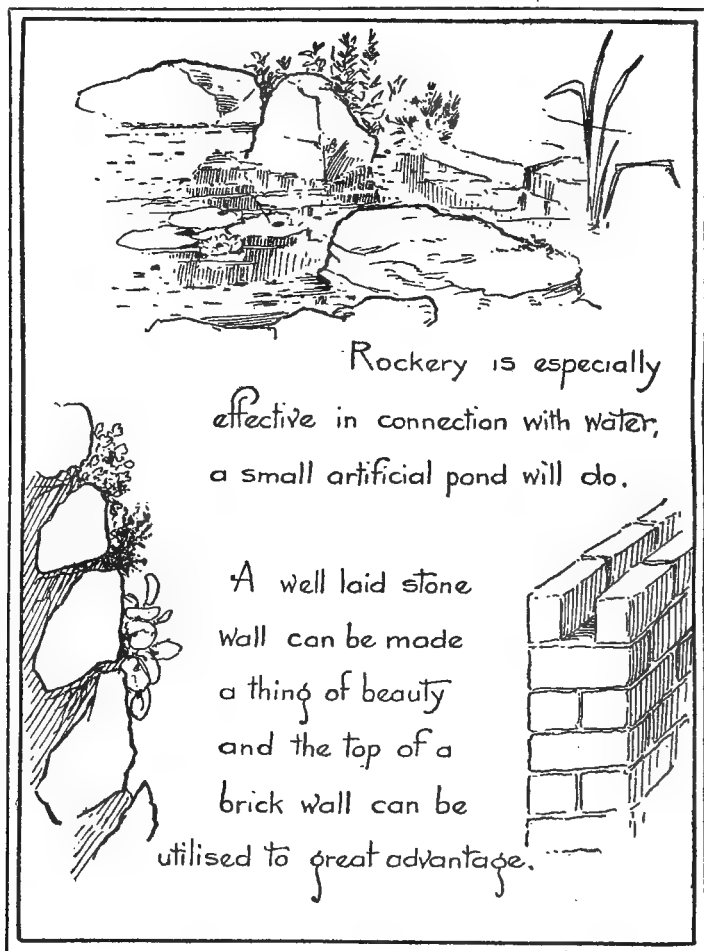
is always desirable that the site should be at a comparatively low level. If this can be managed, then the water supply may be led from the tap or pump along a small watercourse made of stones and concrete, and fringed with moisture-loving plants. The position of the water garden must be sunny, for unless the water is well warmed by the sun the flowers will not bloom satisfactorily, and the Water Lilies will only remain open for a short time.

Making the Pond Watertight. The site having been chosen, work may begin, an excavation of the desired size and form being made. This should be from 3 to 4 feet deep. Further details of construction depend considerably upon the nature of the subsoil. If clay, the soil at the bottom and sides of the hole should be well beaten. Some water gardens are formed of clay alone, but unless the subsoil is of the same material leakage is almost certain to occur. If a coating of puddled clay, about 6 inches thick, can be applied, all the better, but this is not essential. The earth should be well trodden and beaten to prevent subsidence—a frequent cause of trouble in water gardens. If clay is not available, it will be necessary to use concrete made of cement and gravel, in the proportion of about 3 parts of gravel to

1 of cement ; but if old bricks and stones can be obtained a great saving may be effected.

Old concrete slabs, paving tiles or other material, as non-porous as

about 3 inches of concrete should then be put on and roughened with a trowel to enable the final cement coating to adhere. If no stones are available, the concrete ought to be



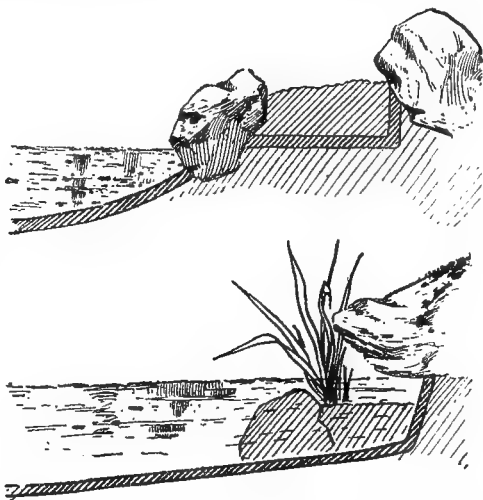
possible, can be built closely together to form the first layer along the bottom and round the sides, placing fine concrete carefully in the crevices so that they become perfectly filled. A layer of

from 6 to 9 inches thick ; it must be thoroughly mixed. If the work is improperly done leakage is almost certain to occur. A comparatively recent discovery is that about 10 per cent. of oil mixed with

the concrete renders leakage less liable. Low-grade petroleum is sometimes used, but the writer has employed raw linseed oil with satisfaction. When the lower part of the material has hardened, it is looked over carefully to see if any hollows or holes remain, and these are filled with concrete composed of equal parts of cement and sand, about 1 inch of the same material

a chain, may be introduced to drain off the water, if that should be required—which is very seldom—or an overflow at the water level may lead to the drain. It is generally sufficient to make a small bog garden into which the surplus water can flow. As for the inlet, there is room for the exercise of individual taste. If a watercourse with sufficient fall can be secured,

How the formal edge of a garden pool is broken up by extending the line of cement along the edge and setting moisture-loving plants there.



being put over all. When this has had time to set, pure cement and water may be applied with a white-wash or other brush. The oil may be mixed with the final coating. The shape of the pond should be irregular; one almost harp-shaped looks well.

The Water Supply. It cannot be too clearly stated that a constant flow of water is not only unnecessary but inadvisable. A small water garden need not have a drain to carry away water which may overflow. If such a drain is at hand, an outlet in the bottom, which can be blocked with a stopper attached to

the water may enter over a small cascade; if not, it can be led through a pipe, while some prefer a little fountain spray. This is not much appreciated by Water Lilies, however.

A great improvement is effected if the sides of the excavation are carried up to within about 6 inches of the water level, and then formed into a kind of shelf, 6, 12, or more inches broad, with concrete on the bottom and up the side, and with stones round the outside and fixed along the front next to the water. This shelf can then be filled with soil; it will form a suitable place

for the moisture-loving Primulas, and add much to the beauty of the water garden.

Time for Planting. Any ordinarily good soil is suitable for aquatic plants; garden loam with the addition of some well-rotted cow manure will suffice. About 6 inches depth of compost is enough. Before the soil is put in, the pond ought to be filled with water; if this is allowed to stand for some time it can be seen whether or not there is leakage. Should any leakage be found, it must be carefully stopped, and if the precise spot cannot be seen the whole pond ought to be coated again with cement wash and oil. If the pond is found to be watertight, the soil may then be put in and the plants set in position. April and May are suitable months in which to plant Water Lilies and other aquatics; plants for the margins may be set in February, March or April. If the water cannot conveniently be emptied when planting time comes round, the plants may be placed in small receptacles, such as old strawberry punnets, baskets or such like, filled with soil and weighted with stones, and sunk where required. Even the crown of an old straw hat will do for the purpose, and, failing anything else, pieces of paper tied round and weighted will serve, although the paper looks unsightly in the water for a time.

At first the water will become foul-looking, but will gradually clear, and should remain so. In warm weather green confervoid matter will usually appear, but this may be cleared out with a rake. The water must be kept up to about the same level, but only the waste caused by evaporation and

soaked up by the plants should be replaced.

Water Plants in Tubs. Those who have no other means of growing water plants may well make use of tubs. I have even grown and flowered Water Lilies in ordinary zinc cans, sunk to the rim in the ground. A series of tubs may be grouped with or without a small connecting watercourse or pipeline. A petroleum cask cut in two will provide two good tubs at little expense. Put in about 4 inches of soil and plant in the ordinary way. The space between the tubs may be carpeted with Mossy Saxifrage or other low-growing plants. Water Lilies in tubs do not flower freely, unless the leaves are thinned out to allow of the admission of the sun to the water. A single "crown," or root, is enough for a small tub or zinc pail.

The Best Water Plants. Undoubtedly the newer Water Lilies are the finest flowers for the small water garden, and a selection of these offered at a moderate price is given. Even our common white Water Lily, *Nymphaea alba*, is worth growing, but the cross-bred sorts are more beautiful. The Laydekeri varieties are very well adapted for small water gardens, but the others have larger and finer flowers, and can be as easily grown as the smaller ones if the plants are not allowed to become too large.

Ordinary Water Lilies (plant in water 2 to 3 feet deep): *Nymphaea alba*, white; *Aurora*, orange and crimson; *caroliniana*, pink, fragrant; *Ellisiana*, carmine purple; *Gladstoniana*, white, semi-double; *Marliacea chromatella*, canary yellow, *albida*, white; *carnea*, flesh, and *gigantea*, large white;

Richardsoni, double white ; Seignouretii, orange red and carmine.

Small Water Lilies (plant in 18 inches of water): *Nymphaea Laydekeri* liliacea, rosy lilac, purpurata, purple, and rosea, carmine rose ; *pygmaea*, white, and *Helvola*, yellow.

Other aquatic plants (plant 1 to 2 feet deep) are : *Aponogeton distachyon* (Water Hawthorn), white, do not plant near *Nymphaeas* ; *Butomus umbellatus* (Flowering Rush), pink ; *Calla palustris* (Water Arum), white ; *Houttonia palustris* (Water Violet), white ; *Limncharis Humboldtii*, yellow ; *Menyanthes trifoliata* (Bog Bean), white ; *Orontium aquaticum* (Golden Club), yellow ; *Pontederia cordata*, blue ; *Ranunculus lingua*, yellow, spreads freely ; *Sagittaria japonica* fl. pl. (Arrow Head), double yellow, spreads freely ; *Sagittaria japonica* fl. pl. (Arrow Head), double white ; *Villarsia nymphaeoides*, yellow.

The appearance of a water garden can be improved considerably by planting flowering plants, or those with ornamental leaves, by the margin. In a small garden it may not be possible to find room for many of them, but a few bold clumps give character and distinction to the scene.

The Marsh Marigold, *Caltha palustris*, which bears showy yellow flowers like large buttercups in spring, is very beautiful and gives no trouble. The Globe Flowers, or *Trollius*, are charming spring and early summer plants which bear large blooms of some shade of orange or yellow. *Trollius europaeus*, with yellow flowers, and *Trollius asiaticus*, with orange-coloured flowers, are the com-

monest kinds, but there are named varieties, described in catalogues, which bear blooms of various shades.

The *Spiræas* and the closely-related *Astilbes* are splendid waterside plants which bear handsome plume-like inflorescences of white or coloured flowers in summer. The most striking of all is *Spiræa aruncus*, which reaches a height of 4 or 5 feet and has cream white flower plumes ; it is a splendid sight when well established and in full bloom. There are many varieties of *Astilbe* having flower plumes of rose or crimson. The finest of all is one called *Granat*, crimson.

The Siberian Iris, *Iris sibirica*, is a graceful plant 3 feet or so high, which bears lavender blue flowers in early summer ; there are several named varieties having blooms of different shades of blue. This is an excellent waterside plant. The Japanese Irises, which have large richly-coloured, flattish blooms, flourish in the mud by the waterside, but they must be in a place fully exposed to the sunshine.

Among the hardy *Primulas* which like moist soil there are several striking kinds. The Japanese Primrose, *Primula japonica*, in its numerous varieties, is perhaps the most easily managed. *Primula florindae* grows about 3 feet high and bears bunches of yellow flowers. *Primula rosea* is a spring-blooming plant of low growth which bears bright carmine rose flowers and delights in moist soil. Fair Maids of France, *Ranunculus aconitifolius*, having white flowers, is also charming by the waterside.

Hardy Ferns will do well there ; the Royal Fern, *Osmunda regalis*, is particularly suitable.

CHAPTER 33

How to Make a Bog Garden

THERE is an ever-increasing desire on the part of flower-lovers to depart from stereotyped arrangements and to make the garden, however small, distinct from others, so as to give it a character of its own. Those who seek for variety will find that a little bog garden affords an opportunity of cultivating several charming plants which will not thrive in an ordinary border or on a rockery. Many flowers require a supply of moisture at the root, yet do not need to be planted in water, and such kinds may be treated most successfully in the bog garden. This may be of considerable size, or occupy but a square yard or two, and can be constructed at little cost. The bog garden must be in such a position that it receives a considerable amount of sunshine. It may either be on level ground or on a slope which faces south or south-west.

The First Step is to take out the soil to the depth of about 1 foot. If the subsoil is of clay it will not be necessary to line the hole with stone or concrete, but it is desirable to puddle the clay, and it is always safer to put a layer of concrete or other material at the bottom and up the sides; this is essential if the subsoil is not of clay. The concrete is made by using 1 part of cement to 3 parts of gravel or chips of

stone or brick. A thickness of about 3 inches will be enough, provided the soil beneath is thoroughly firm and beaten to prevent subsidence.

Instead of concrete, which must be thoroughly mixed, and have about 10 per cent. of linseed oil or low-grade petroleum incorporated with it, the bottom and sides may be laid with old bricks, pieces of stone or tiles, placed closely together and the crevices filled with cement. From about 3 inches below the ground level, and rising to about 6 inches above it, a layer of rougher stones ought to be built near the sides and all joints filled with cement mixed with sand and soil. The upper part of this layer of stones should be coated with a puddle of soil and lime, so as to induce the growth of moss, which will give the edging of the bog a natural appearance.

The water may be led by a small watercourse, which forms a pretty feature if well arranged; or a pipe may be used, an aperture being made at about 6 inches from the bottom to allow of an overflow, thus securing sufficient moisture underneath without too much above. It is desirable to put perforated zinc over the outlet to prevent the pipe being choked. This should be looked at occasionally lest the zinc become blocked up. It

is not necessary, although convenient, to have, also, an outlet pipe fitted with a plug valve to allow the whole bog to be drained. Some gardeners make a round hole in the concrete and fit in a long wooden plug, which can be withdrawn from the surface to allow all water to run off. If the bog is on a slope, divisions may be made by building ridges across it at different points, so as to keep the water at the required level. These cross walls may be about 6 inches or a little more in height.

Preparing for the Plants. When the concrete at the bottom and sides has become well set the bog garden may be filled with soil and stones. The first 6 inches, i.e., from the bottom to just above the outlet, ought to be filled with broken stones of various sizes. On this is laid a layer of rough soil, such as the coarser portions of peat or turf soil. Some use slabs of turf, but there is a danger of grass and other weeds appearing.

Then comes the remainder of the soil, which is usually of good fibrous peat. Failing peat, a compost of loam, leaf-soil, and sand in about equal proportions may be employed. Some pieces of charcoal added will be enjoyed by many of the plants. The soil should not be laid in a level, but in an undulating layer, for some plants prefer drier ground than others. A group or two of stones raised above the surface and enclosing a "pocket" of soil will be useful for certain plants, such as the Lady's Slipper Orchid (*Cypripedium spectabile*). In a large bog garden small channels laid with stones, tiles, or concrete may run here and there, or small pools made with concrete, in the way described for small water

gardens, are formed, and look very pleasing when furnished with Water Lilies or other aquatics.

The best time to plant the bog garden is in spring or late summer, and few directions are needed with regard to this work. It must be remembered that while these plants prefer light fibrous and porous soil, they should be planted fairly firmly at first, so that the roots may be able to get hold of the compost. When established they will look after themselves. Once planted, bog plants require little attention, but they must not be neglected or the garden will become overrun with the stronger-growing kinds, and the smaller beauties will disappear. Periodic attention ought to be given to this, the strong-growing and rampant plants being reduced in size when necessary. Another point often neglected is that of top-dressing. It is always desirable to look over the plants in spring, and again in autumn, and to put a little fresh soil about those which are too high above the soil. A compost of loam, leaf-soil, and sand answers quite well for this.

The number of plants which enjoy the moisture of the bog is practically unlimited, and includes many plants ordinarily grown in the border. Special reference may, however, be made to some of the *Primulas*. These are of striking beauty, and a considerable number are true bog-lovers. In the following list most of the tallest and coarsest plants suitable for a large bog garden have been omitted. It is, as a rule, better to plant on ground a little elevated, but so that the roots can reach the wet soil.

Plants for the Bog Garden:
Anemone (Windflower) *rivularis*, white. *Astilbe* (*Spiræa*) *Davidii*,

deep rose ; *Arendsii*, pink and other shades ; *chinensis*, pink ; *rivularis*, white, strong grower ; *Thunbergii*, white ; *astilboides floribunda*, white.

Caltha (Marsh Marigold) *palustris* fl. pl. ; *monstrosa* fl. pl., yellow ; major fl. pl. ; minor fl. pl. ; *polypetala*, yellow. *Cardamine* (Ladies' Smock) *pratensis* fl. pl., white or pink. *Chrysanthemum arcticum*, pinkish white. *Cypripedium* (Lady's Slipper Orchid) *Calceolus*, brown and yellow ; *macranthum*, rosy purple and white ; *pubescens*, yellow ; *spectabile*, white and rose.

Dentaria digitata, purple ; *bulbifera*, purple or white ; *pinnata*, purple, lilac or white. *Dodecatheon* (American Cowslip) *Hendersoni*, crimson ; *integrifolium*, rosy crimson ; *Jeffreyi*, rose ; *Meadia*, purple ; *album*, white. *Drosera*, an interesting insectivorous plant.

Gentiana (Gentian) *asclepiadea*, blue ; *alba*, white ; *Arvernensis*, blue ; *Pneumonanthe*, blue ; *verna*, blue. *Geum* (*Avens*) *rivale*, Leonard's variety, red.

Helonias bullata, purple.

Iris lacustris ; *Kaempferi*, various ; *sibirica*, in variety ; *spuria*, white and yellow ; *Monnieri*, yellow ; *Pseudacorus* fol. var., with variegated leaves ; many others, but not the Bearded Irises.

Lychnis (Catchfly) *haageana*, various. *Lysimachia nummularia* (Creeping Jenny), yellow ; *aurea*, yellow ; *clethroides*, white. *Lythrum* (Loosestrife) *Salicaria superbum*, crimson purple.

Mimulus (Musk) *Burneti*, orange ; *cardinalis*, scarlet ; *cupreus* Brilliant ; *luteus*, yellow ; *Bees'* Hybrids, various. *Myosotis* (For-

get-me-not) *palustris*, blue ; *Rehsteineri*, blue.

Orchis (Orchid) *latifolia*, purple ; *mascula*, purple.

Parnassia (Flower of Parnassus) *caroliniana*, white ; *palustris*, white. *Pinguicula* (Butterwort) *grandiflora*, purple blue. *Podophyllum* *Emodi*, white ; *peltatum*, white. *Primula* (Primrose) *Beesiana*, purple ; *Bulleyana*, orange scarlet ; *capitata*, blue ; *cashmeriana*, purple, drier parts ; *denticulata*, various, drier parts ; *cockburniana*, brick red, drier parts ; *farinosa*, pink or rosy purple ; *frondosa*, rosy purple, drier parts ; *involucrata*, white ; *japonica*, in variety ; *Poissoni*, purple, mild localities only ; *pulverulenta*, rosy crimson ; *rosea*, rosy carmine ; *sikkimensis*, yellow, partial shade.

Ranunculus (Buttercup) *lingua major*, yellow, tall, spreads quickly ; *aconitifolius*, white ; *alpestris*, white ; *Seguii*, white. *Rhexia virginica*, rosy purple. *Rodgersia pinnata*, white ; *podophylla*, white.

Sanguinaria (Blood Root) *Canadensis*, white, drier parts. *Sarracenia purpurea* (hardy Pitcher Plant), mild places only. *Saxifraga aizoides aurantiaca*, orange ; *Hirculus major*, yellow ; *peltata*, tall, pinkish. *Sisyrinchium* (Satin Flower) *anceps*, blue. *Spiraea*, any.

Thalictrum (Meadow Rue) *alpinum*, fine foliage. *Trollius* (Globe Flower), any.

Veronica (Speedwell) *saxatilis*.

The following dwarf grasses are suitable : *Acorus graminifolius* fol. var., *Carex japonica* fol. var., *Cyperus longus*, *Juncus spiralis*, *Scirpus zebrinus*, tall.

CHAPTER 34

A Moraine for Alpine Flowers

A MORaine is described by the dictionary as "an accumulated mass of debris found at the foot, in the centre, and by the sides of a glacier." That may not convey much to the amateur who does not know the possibilities of a moraine in the garden, but he will be interested to learn that the moraine makes easy the cultivation of certain alpine plants that are otherwise very difficult. Briefly put, the garden moraine consists of a small excavation, thoroughly well drained, and filled with a mixture of stone and soil, thus forming a compost that remains comparatively dry in winter because water flows through it quickly, and is moist in summer because the surface covering of small stone chips or gravel prevents loss of moisture through evaporation. The formation of a moraine is interesting work, and the ease with which many charming alpine can be grown there is surprising.

In hot and dry parts of the country the provision of an underground water supply for the moraine has proved of great benefit; but in districts where the rainfall is of an average, or above an average quantity, that is unnecessary, and leads to needless expense. The writer has several moraines in his garden, constructed on different principles, and he has

come to the conclusion that a simple, "dry" moraine will answer for almost every district. It requires less expense, and serves its purpose perfectly.

Making a Moraine. The moraine may be formed either above the ground level, on a level spot, or on a sloping bank. It should be in a sunny position. For its construction on a level place the ground must be excavated about 18 inches deep. If the moraine is to be a "dry" one, no watertight bottom is required, but the ground may be well beaten down. On this place about 6 inches of rough stones for drainage. Above this, again, put about 6 inches of smaller stones, mixed with soil, composed of loam, leaf-mould, and a little sand and gravel. Then come about 5 inches of gravel, mixed with loam, leaf-soil, and sand in about equal proportions; over this place an inch or two of smaller gravel. The gravel may be of any available kind, or stone chips, such as are used for roadmaking and surfacing roads, can be employed. Chips of broken sandstone, whinstone, limestone (only suitable for plants which do not object to lime), or even broken bricks, may be used. Gravel is also suitable. Sandstone and broken bricks are, however, more liable to become grown over with moss, although that does not

detract from the appearance of the moraine. Chips which will go through a half-inch sieve are best.

It adds greatly to the appearance of the moraine if some large stones and boulders are arranged in it, rising above the level of the gravel. These can be so disposed as to give shade to plants which require protection from the hottest sun.

The Moraine Above Ground. Highly satisfactory results are obtained when the moraine is raised above the surrounding soil. A group of three or more large boulders may be arranged in an informal fashion, but touching each other so as to form a stone-margined bed for the reception of the gravel, etc. A few inches of broken stones will form the base and allow for free drainage. Above this a layer of rougher gravel should be laid, and above that, again, a layer of finer gravel mixed with loam, leaf-soil, and a little sand. The surface may be covered with about an inch of small gravel or stone chips. Such a moraine may be so constructed as to harmonise well with a rockery or rock garden.

An artificial-looking dry moraine, but one which is excellent for the cultivation of certain choice and difficult alpine, is constructed like a square box of dry stone walling about 3 feet high. A layer of rough stones for drainage is first laid, and on this is placed 6 inches of gravel. Then comes about 12 inches of rich loam, manure, and sand to which the deeper-rooting plants will penetrate. On top of this come the gravel and chips, mixed with loam, leaf-soil, and sand, and finally a covering of small gravel. The sides and end of the stone "box" should be so built that there are plenty of interstices

for the escape of surplus water. Such a moraine is of artificial appearance, but the plants thrive excellently there.

The Wet Moraine. In the drier parts of the country and in other places, for the cultivation of a few special alpine, the wet moraine may be desirable. It is more expensive to construct, and needs a steady supply of water during the summer months, as well as in dry weather in spring and autumn. In districts with an average rainfall it is unnecessary; but there are many amateurs, especially in the southern and western counties, who find a wet moraine of great assistance in the cultivation of choice alpine. It is best situated on a gentle slope. If on the level part of the garden the bottom should have a slight fall. The soil must be excavated to a depth of 18 to 24 inches, and made watertight at the base and for about 8 inches up the sides by concrete, or bricks and stones cemented at the joints. Across this, at intervals of a few feet, should run ridges of brick set in cement or concrete, and raised to within half an inch of the height of the watertight parts of the sides. At the base of the ridges there should be an opening sufficient to drain off all the water, but kept stopped with a plug during late spring, summer, and early autumn. The plug should then be taken out in November to allow surplus water to escape. A similar but larger aperture should be made at the lower end of the excavation; it ought to be "stopped," except in winter.

About 3 inches of concrete or brick laid flat and covered with a slight layer of concrete will be enough to place in the bottom of this moraine. The sides are made

watertight to the extent already suggested ; the moraine is then outlined with rough stone to define its extent. At the bottom of the excavation, on top of the layer of concrete, place a layer of 6 inches of broken bricks or stones. Above this put 2 or 3 inches of smaller stones to cover the spaces between the lower ones. Then comes a layer of chips or small gravel mixed with grit and a little sandy soil, leaving about 6 inches of space for the compost which constitutes the upper part. This should consist of about 10 to 15 parts of an equal

are in pots when received the outer part of the ball of soil and roots should be loosened with a pointed stick.

Plants in moraines generally spread rapidly, and it is necessary to divide them occasionally. Those of rampant, creeping growth should not be planted there. Weeding is essential ; seedlings of weeds appear in the moraine in greater numbers than in ordinary soil.

Plants for the Moraine. Although the annexed list of suitable plants is a long one, it is far from exhaustive. *Achillea* (Yarrow) *argentea*,

In a moraine or scree in the rock garden many choice and rather difficult alpine plants can be grown. A moraine is exceptionally well drained, for it consists chiefly of stones.



mixture of loam, sand, and leaf-soil. On this spread about an inch of chips or gravel.

A Simple Moraine. An excellent moraine for many good plants can be made by selecting a gently sloping, well-drained part of the rock garden, and placing on this 6 inches of chips or gravel containing a sprinkling of sandy soil. Cover the surface with an inch of stone chips or small gravel.

Planting. Planting should be done in September or in spring. Some difficulty may be experienced in establishing the plants firmly in the gravel or chips, and it is advisable to put a little rock-garden soil about their roots ; after covering this with stone chips, give them a soaking of water. If the plants

white ; *rupestris*, white ; *serbica*, white ; *tomentosa*, yellow. *Androsace* (Rock Jasmine) *carnea*, flesh ; *Chumbyi*, pink ; *chamaejasme*, white and pink ; *ciliata*, pink ; *lanuginosa*, rose pink ; *sarmentosa*, pink ; *sempervivoides*, carmine. *Aethionema* (Lebanon Candytuft) *coridifolium*, pink ; *grandiflorum*, pink ; *iberideum*, white ; *pulchellum*, rose pink. *Anemone vernalis*, blue. *Arenaria* (Sandwort) *purpurascens*, purple. *Armeria* (Thrift) *caespitosa*, pink. *Asperula* (Woodruff) *Gussoni*, pink ; *hirta*, white.

Campanula (Bellflower) *Allioni*, *carnica*, *cenisia*, *excisa*, *Raineri*, *Stansfieldii*, *waldsteiniana*, and *Zoysii*.

Dianthus (Pink) *alpinus*, pink

or white ; *Freynei*, rose ; *graniticus*, crimson ; *neglectus*, carmine ; *squarrosus*, white ; almost all others. *Douglasia vitaliana*, yellow. *Draba* (Whitlow Grass) *aizoides*, yellow ; *bruniaefolia*, yellow ; *dedeana*, white ; *imbricata*, yellow ; *pyrenaica*, lilac.

Epilobium (Willowherb) *obcordatum*, purple. *Erinus alpinus*, purple, rose or white. *Erodium* (Heron's Bill) *chelidonifolium*, pink ; *corsicum*, pink ; *guttatum*, white ; several others.

Gentiana (Gentian) *brachyphylla*, blue ; *verna*, blue ; *acaulis*, blue. *Geranium argenteum*, rose ; *cinereum album*, white ; *lancastriense*, pink. *Gypsophila* (Chalk Plant) *cerastoides*, white.

Helichrysum (Everlasting) *bellioides*, white ; *frigidum*, white. *Hypericum* *Coris*, yellow ; *repens*, yellow.

Inula acaulis.

Leontopodium alpinum (Edelweiss), white. *Linaria* (Toadflax) *alpina*, purple and orange. *Linum* (Flax) *alpinum*, blue ; *flavum*, yellow.

Oenothera (Evening Primrose) *caespitosa*, white ; *pumila*, yellow. *Omphalodes Luciliae*, blue.

Papaver (Poppy) *alpinum*, yellow, orange, white, etc. *Pentstemon Davidsoni*, crimson. *Phlox amoena*, pink ; *Douglasii*, lavender blue ; *Stellaria*, lavender grey ; *subulata*, in variety. *Potentilla* (*Potentil*) *nitida*, rose ; *alba*, white. *Primula* (Primrose) *Auricula* ; *decora*, purple ; *marginata*, lilac blue ; *nivalis*, white ; *viscosa*, pink ; and others.

Saxifraga (Rockfoil) *Aizoon* and its several varieties ; *Boryi*, white ; *Boydii*, yellow ; *alba*, white ; *burseriana*, white ; *cochlearis* and variety *minor*, white ; *Elizabetae*, yellow ; *Faldonside*, yellow ; *lilacina*, lilac ; *longifolia*, white, etc. ; *oppositifolia* and varieties, various colours ; *paradoxa*, cream ; *Petraschi*, white ; *Paulinea*, yellow ; *Salomoni*, white ; and many others. *Sedum* (Stonecrop) *arborescens*, white ; *spathulifolium*, yellow ; and many others. *Sempervivum*, any. *Silene acaulis*, rose ; *alpestris*, white.

Tunica Saxifraga, rose.

Veronica (Speedwell) *Bidwillii*, white ; *canescens*, blue.

Wahlenbergia pumilio, lilac blue ; *serpyllifolia*, purple.

CHAPTER 35

Alpine Flowers for the Cold Greenhouse

THOSE who possess a cold or unheated greenhouse rarely put it to the best use. Yet it has great possibilities. There is perhaps no better way of utilising it than as a shelter for a collection of alpine or rockery flowers. Many of these thrive admirably in flower pots and pans, and if one has a representative collection the cold greenhouse can be kept more or less gay for months together. The chief display will be in late spring and early summer, yet from the first few weeks of the new year until the outdoor garden is full of bloom there will be something to interest and attract.

The best type of greenhouse for this purpose is a span-roofed one, placed in a sunny position and well provided with means of ventilation. The chief aid to success is to keep the greenhouse perfectly cool. No artificial warmth is required, for all the plants to be recommended are hardy, and must have an abundance of fresh air, except in the coldest weather. The disadvantage of a lean-to greenhouse, if in a sunny position, is that it becomes very hot in late spring and early summer, with the result that the flowers soon lose their beauty. However, this defect can be counteracted very largely by shading and free ventilation during periods of bright sunshine.

A suitable time to make a start with a collection of rockery flowers is in September or October. They should be obtained in pots, then they will need little further attention until after they have flowered. It is advisable, however, to make sure that the drainage is adequate, and that the plants are free from insect pests, which are fond of hiding among the crocks at the bottom of the flower pots. The application of water in which lime is mixed is an easy way of clearing them out. It is an excellent plan to cover the soil beneath the stages with cinders for the purpose of helping to maintain a moist atmosphere in warm weather. If the stages are covered with slates, and cinders passed through a small-meshed sieve are placed upon them, the benefit to the plants will be considerable.

Alpine and rockery flowers suitable for the cold greenhouse are very numerous and offer a wide choice to the amateur ; but it is as well that he should begin with those that present little difficulty from the gardening point of view.

There are some lovely flowers among the Primulas. One of the easiest of all is *Primula frondosa*, which has greyish leaves and rose pink flowers, and when in bloom is not more than 6 inches high. The Sikkim Primrose (*Primula sikkimensis*) is a fascinating and

graceful plant, bearing primrose-coloured blooms on tall stems. *Primula denticulata* is a handsome Himalayan plant which produces a rounded head of mauve blossom on a stem about 12 inches high, quite early in spring. *Primula Auricula* and its varieties are especially useful for the cold greenhouse, and are represented by many beautiful flowers in innumerable shades of colour. *Primula marginata*, with silvery margined leaves and, in spring, pale rose blooms, is a dainty little plant, and room ought also to be found for *Primula clusiana*, with attractive green foliage and rose-coloured flowers. One of the most brilliant of all exotic Primroses is *Primula rosea*, which, in spring, bears flowers of intense rose-colour on stems 6 inches or so high.

The Saxifrages, or Rockfoils, are an important group, and furnish many plants that are indispensable to the purpose in view. The mossy kinds soon cover flower pans with a cushion of attractive greenery, which in spring is decked with flowers in red, pink, or white. A few of the best are *Bathoniensis*, crimson; *hypnoides*, white; *muscoïdes atropurpurea*, reddish; *Kingii*, white; and *Guildford Seedling*, red. The Silvery Saxifrages are very numerous; they form rosettes of silvery grey leaves, and bear panicles, varying considerably in height, of small flowers—white, pink, rose, or yellow, often beautifully spotted. A few to begin with are *Aizoon*, *Balcana*, *rosularis*, *flavescens*, *Cotyledon*, *cochlearis*, *Engleri*, and *Hostii*. Of the Saxifrages of other sections, special mention should be made of *oppositifolia*, with rose crimson blooms in

early spring; *apiculata*, primrose-coloured; *sancta*, dark green foliage and yellow flowers; and *burseriana*, white. A representative collection of *Primulas* and *Saxifrages* will go a long way towards filling the cold greenhouse, and will prove of unfailing interest throughout the first four or five months of the year.

Of innumerable others from which to make a choice the following are recommended to the beginner :

Arenaria balearica and *montana* (beautiful white-blossomed Sandworts); *Aubrietia* in many varieties; *Androsace Chumbyi* (Rock Jasmine); *Campanula pusilla* and other dwarf Bell-flowers; *Cyclamen Coum* and *repandum* (spring-flowering Cyclamen); *Dianthus caesius*, *deltoides*, and other Pinks; *Gentiana acaulis* (the brilliant blue *Gentianella*); *Sempervivum arachnoideum* (Cobweb Houseleek); *Draba Aizoon* (Whitlow Grass); *Dryas octopetala* (Mountain Avens); *Gypsophila repens* (creeping Chalk Plant); *Linum narbonense* (Blue Flax); *Lithospermum Heavenly Blue* (Gromwell); *Myosotis alpestris* (Forget-me-not); *Oxalis enneaphylla* (Wood Sorrel); *Papaver alpinum* (Alpine Poppy); *Ranunculus montanus* (Alpine Buttercup); *Saponaria ocymoides* (Soapwort); *Trillium* (Wood Lily), and *Veronica rupestris* (Speedwell).

Many of the smaller bulbs ought also to be potted in late summer and early autumn, such, for example, as *Anemone apennina* (Woodflower); *Muscari* (Grape Hyacinth); *Snowdrop*; *Crocus*; *Erythronium* (Dog's Tooth Violet); *Fritillaria* (Fritillary); *Chionodoxa* (Glory of the Snow), and others.

Most of the plants mentioned can be grown in flower pots or pans, filled to the extent of one-third with crocks or broken brick for drainage, in a compost of loam with which a little peat or leaf-soil and plenty of sand and broken stone are mixed. The soil surface ought also to be covered with pieces of stone. The plants must be kept moist at the root during spring and summer, but little watering is required during winter. They may remain in the greenhouse all the year round, providing that it is possible to keep them perfectly cool and moist in summer. If such conditions cannot be provided it is best to plunge the pots to the rims in a bed of ashes out of doors or in a frame from May to September.

The amateur will find it easier to provide the plants with the conditions they need if he places them in a cold frame for the summer; they are likely to do better there than in the greenhouse, and if the pots are plunged in ashes, as suggested, the roots will not suffer from the effects of drought, which are fatal to plants of this kind. In early autumn, October, the plants ought again to be placed in the cold greenhouse.

Propagation of most kinds can be effected by means of cuttings taken off as soon as the plants have finished flowering. The cuttings are cut across the base with a very sharp knife or razor, a few of the lower leaves being removed; they are inserted round the edges of pots filled with very sandy soil or with sand alone. They are placed in a cold frame kept closed for a few weeks until roots have formed. When it is known that the cuttings are rooted—by signs of fresh

leaf growth—the frame must be ventilated, the ventilation being gradually increased until, in the course of a few weeks, the top is removed or left wide open.

Another method of inducing the cuttings of alpine or rock plants to form roots quickly is to make up a bed of sand in a frame, insert the cuttings in the sand, close the frame, and leave it unshaded. Or, which is probably more convenient to most amateurs, the cuttings may be placed in boxes filled with sand. The frame must be set in a position fully exposed to the sunshine. The temperature will become tropical inside the frame as a result of its being kept closed, and the sand must be watered copiously; otherwise it will dry out rapidly and the cuttings will perish. This is a quicker method of rooting cuttings than the usual one of keeping them in a shaded frame, but it will fail unless the sand is always moist.

Charming miniature gardens for the alpine or unheated greenhouse can be made by setting a number of rock plants in stone troughs or sinks, or even in large flower pans. Those which are of compact growth must be chosen. Many of the silvery Saxifrages are admirable plants for this purpose; so, too, are the Houseleeks or *Sempervivum*, *Sedum* or *Stonecrop*, *Primula*, *Edelweiss* or *Leontopodium*, and many more. The pan or trough must be well drained, and pieces of stone should be arranged among the plants so that the effect is that of a rock garden in miniature. Thyme and other low-growing, creeping plants may be set near the edge of the trough; they will then spread over the side and add to the natural charm of the scheme.

CHAPTER 36

An Explanation of Budding

THIS work should be performed late in July and in August. Budding consists in inserting a bud of a variety we wish to propagate in an incision made in the bark of the stock. This bud, or "eye," is found in the axil of the leaf. The only stock for Roses that can be recommended to the amateur is the common English briar, *Rosa canina*.

This is used in three forms: (1) As tall shoots cut from the hedge-rows in the autumn. If a few straggling roots have started from the base, so much the better; but they root readily without. These are used to form standards. (2) As briar cuttings taken from the current year's growth and inserted in sandy soil in the autumn. (3) As seedling briars raised from seeds contained in the wild Rose hips. The last two are used to produce dwarf or bush plants. Choose, if possible, a spell of fine weather, as heavy rain just after budding dwarf stock sometimes leads to failure.

Preparing the Bud. Select a shoot of the desired variety that has recently borne a bloom, as it is then generally in the right stage of "ripeness." Cut the leaf-stalks back to within a quarter of an inch of the bud or eye you have chosen, which should be a fairly plump one, not too far up the stem, as those near the bloom give unsatisfactory

results. Insert the blade of the budding knife three-quarters of an inch behind the bud, and draw it forward as closely under the bark as possible, going a little deeper under the bud, and draw it out the same distance in front. You now have a boat-shaped piece of the bark with the bud in the centre.

At the base of the bud will be found a thin strip of the wood. This should be removed. Lift the end of the strip behind the bud with the blade of the knife and, taking the loosened end between the finger and thumb, give it a sharp outward pull and twist. If in the correct stage of ripeness, the wood should come away easily, leaving the germ of the bud in the cavity. If there is a hollow space, which, on holding to the light, looks transparent, the germ has been removed and the bud is useless, so select another one and be more careful.

Inserting the Bud. Everything is now ready for the insertion of the bud. Selecting one of the laterals of a standard briar, make a cut in the bark $1\frac{1}{2}$ inches outward from the main stem. Make a cross-cut at the end of this, and with the handle of the knife gently raise the bark on either side of the T-shaped cut. Taking the bud by the leaf-stalk, slide it down, the bud pointing outwards, under the bark, and it will be found practically to fill the cut.

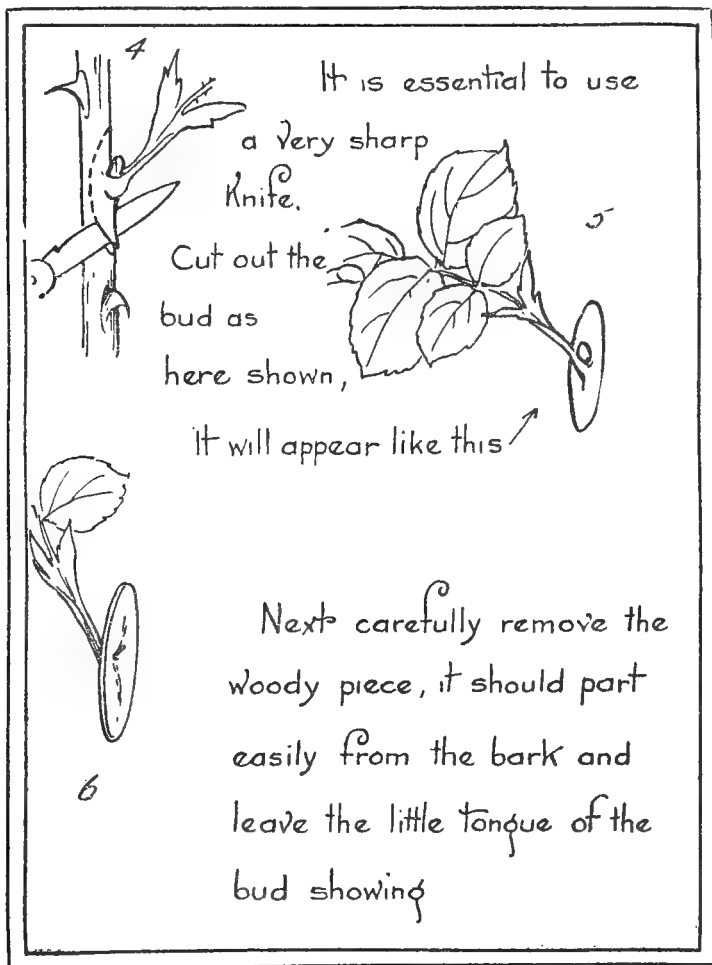
If a little longer, shorten to the required length. It only remains now to tie in.

This is best done with raffia, commencing at the main stem and working outwards. Wind as though putting on a bandage, firmly, but not too tightly, and leave the bud and leaf-stalk exposed.

The laterals may be shortened back a little if very long and in the

way, but it is a mistake to cut back too close, as this forces the bud into premature growth. In budding dwarf or bush Rose trees the bud is inserted low down on the stock. The beginner is certain to have a few failures at first, but with practice he will become perfect.

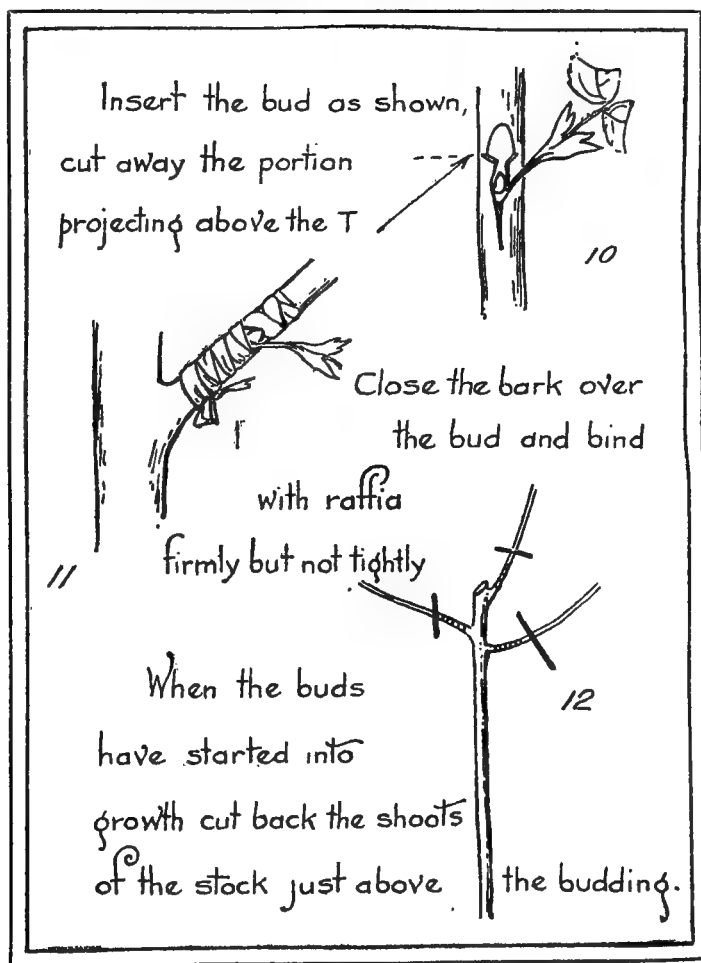
The most important details to bear in mind are to keep the buds absolutely fresh; they should be



placed in water until they can be used. If they are left lying about exposed to the air, budding is unlikely to be successful. Budding standards should be practised only when the sap is running freely ; if possible it should be done in warm, moist weather.

If the weather is hot and dry, and standards must be done while those

conditions prevail, the soil in which the stocks are planted should be soaked with water the day before the buds are inserted. It is a good plan also to water standard stocks after budding and to syringe the stems if the weather remains hot and dry. Sometimes a bud will start into growth in early autumn instead of remaining dormant until spring, as is usual.



CHAPTER 37

How Grafting is Done

AS a rule the average amateur finds little need for grafting.

He may, however, sometimes wish to get rid of an old fruit tree of a worthless variety and replace it with a better variety. Grafting enables this to be done without uprooting the old tree. In winter the branches should be cut back to within about 2 feet of the base ; when the fruit trees are being pruned, in January, a few firm shoots of the past summer's growth must be selected from the variety it is desired to perpetuate. These are tied together and half buried in the soil on a shady border. This is done so that when grafting is practised the stock will be in a more advanced state of growth than the grafts or scions.

The best time for grafting fruit trees is in March, and the most convenient method for the amateur is crown or rind grafting. The scions or grafts are cut to a length of 8 to 9 inches and the lower end is pointed ; about 2 inches from where the sloping cut finishes a horizontal cut is made to meet it, as shown in the diagram, thus forming a "shoulder." The bark of the stock is then slit in three or four places and the scions are pushed down immediately behind, in the way illustrated ; the depth of the slit should be equal to that of the sloping cut on the scion ; the "shoulder" of the

latter rests on top of the stock, and is thus kept firmly in position. When the grafts or scions have been inserted as shown, they are tied in position with raffia, for it is important that they remain firm ; if they become loose, as they may do in windy weather if not made secure, they may not "take." They are then surrounded at the base and round about the slit with grafting wax sold for the purpose, or with moist clay. If the latter substance is used it must be syringed or watered when necessary to keep it moist.

When the buds start into growth it may be necessary to tie them to small canes attached to the old branch, otherwise they will be damaged in rough weather.

The year after grafting the new branches will make good growth, and in the course of a few years a new tree will have arisen on the foundation of the old one. It is waste of time to graft on an old fruit tree unless it is sound and healthy ; if it is weakly or diseased, it should be grubbed up and replaced by a young one.

Grafting depends for its success on the joining together of the cambium layers of stock and scion. The cambium layer or inner bark lies just behind the outer bark, and it is through this layer that the sap flows. It is important therefore to

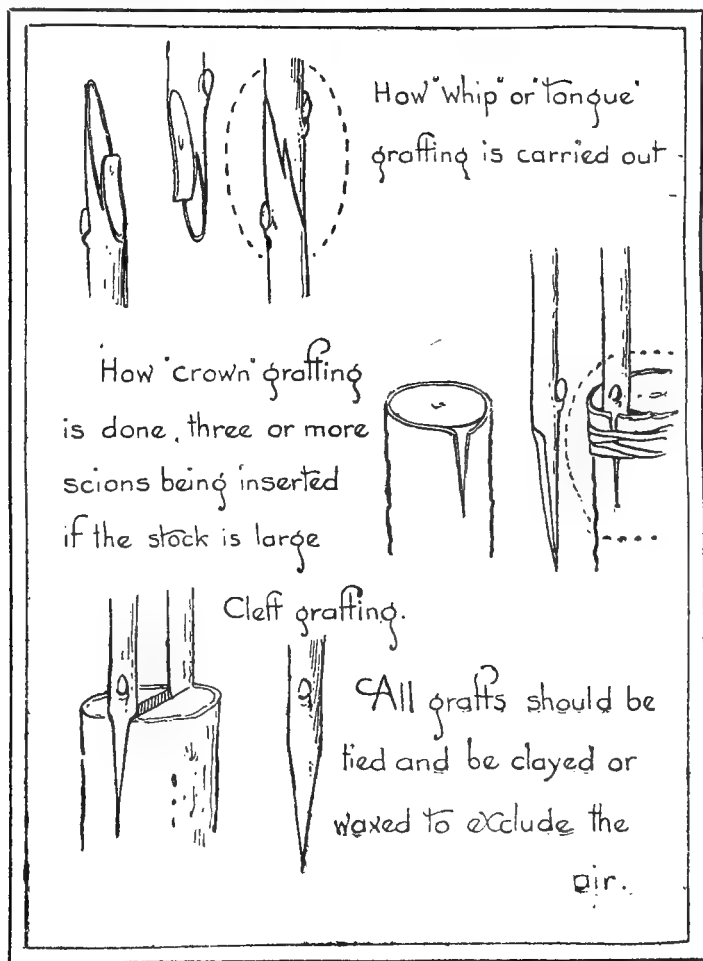
see that the barks of the scion and stock come exactly together on one side.

Care must be taken to cut off all shoots which develop on the stock, which may be the branches of an old tree; if that is not done the growth of the scions will be weakened.

Saddle grafting is practised when the stock and scion are of approxi-

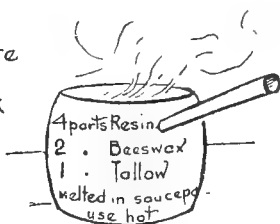
mately equal thickness. The top of the stock is cut in the shape of a wedge, and a piece is cut out of the bottom of the scion so that the latter will fit closely to the stock. This type of grafting is generally carried out under glass.

Whip grafting is another method which is often chosen when stock and scion are not very large. It is shown in one of the illustrations.

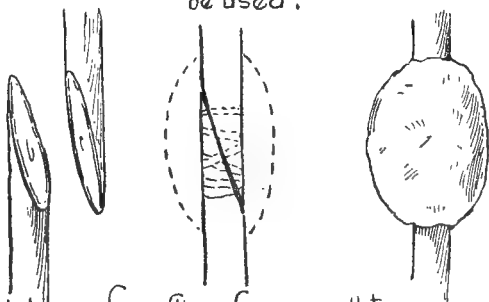




until like mortar. A day before using mix with $\frac{1}{3}$ ^d of its bulk of cow manure & the same amount of chopped hay to bind it; or grafting wax may be used.



Grafting Wax



Useful type of grafting for small trees

The base of the scion and the top of the stock are cut in a slanting direction so that they will fit closely when placed in position.

Certain flowering shrubs are often grafted, e.g., Rhododendron and Lilac, and one of the details of management is to destroy all suckers from the stock. Unless this is done they will lessen the vigour of the named variety of shrub and

in the end may cause it to perish.

It is not uncommon in amateurs' gardens to see shrubs which have been ruined owing to the suckers or shoots from the stock having been allowed to grow and weaken the named shrub to such an extent as to make it worthless. Suckers on Rose trees are common, and should be uprooted before they do damage to the named Roses.

CHAPTER 38

How to Take Cuttings

THERE are two chief types of cuttings, (1) those made from the green or growing shoots and (2) others made from the firm or "ripened" shoots. Plants increased by means of green cuttings are Chrysanthemum, Fuchsia, Heliotrope, Antirrhinum, Zonal Geranium—in fact, most greenhouse and summer bedding plants. The cuttings are inserted at various times of the year from spring until late summer. The plants commonly used for filling summer flower-beds are increased by cuttings taken in August and early September. If a further supply is wanted the tops of the autumn cuttings may be taken off in spring and used as cuttings; those plants that become woody, such as Fuchsia, will, if pruned back a little in spring, soon produce fresh shoots, and these are then removed and inserted as cuttings.

Most rock garden plants can be increased by means of cuttings inserted as soon as the flowers are over. Certain herbaceous border perennials, such as Delphinium and Phlox, may be increased by cuttings made from the young shoots in spring.

Many shrubs are propagated by what are known as "half-ripe" cuttings. These are really green cuttings which have become partly firm or woody, which they do in

July or early August—the best season at which to insert them.

Soft or Green Cuttings. Although the cuttings of some plants form roots more easily and more quickly than others, generally soft or green cuttings—those made from the leafy shoots—will be rooted in from 3 to 6 weeks if they are treated correctly. Cuttings inserted in spring, from January to April, must have the shelter of a glasshouse; the earlier in the year the cuttings are put in, the more artificial warmth will they need. If the glasshouse is heated to such a degree that a minimum temperature of 50 degrees is maintained, and the cuttings are placed in a propagating case within the glasshouse, the temperature inside the case will be about 5 degrees higher, and that is suitable for the cuttings of most plants.

When a shoot is cut off a plant and left exposed to the air it soon "flags" or droops, and if neglected it will perish. The way to make cuttings form roots as quickly as possible is to place them in suitable soil and to keep them in a closed case to prevent loss of moisture by transpiration. Under such conditions the leaves of the cuttings soon regain their freshness. It is found that cuttings form roots most quickly when they are inserted in sandy soil; indeed, sand alone is excellent, and seems essential for a

few, notably the cuttings of perpetual-flowering Carnations.

But sifted soil with which sand has been mixed freely forms a suitable compost for most kinds of green cuttings.

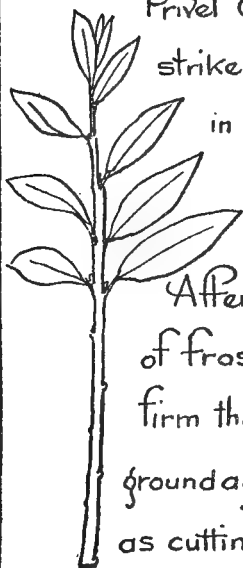
Preparing Cuttings. These are prepared by taking off the lowest leaves and cutting across the stem just beneath a node or joint to form the base. Flower pots having been

filled loosely with soil, holes are made with a slender, blunt-ended stick, and the cuttings are inserted. The soil is pressed firmly to the base of the cuttings. When all have been inserted in this way it will be found that the whole potful of soil is then firm enough. It is necessary to see that the base of the cutting rests on the bottom of the hole. Three inches is a suitable length for

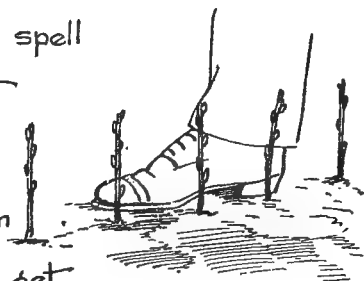
Tread in the
cuttings firmly: this is
essential to success

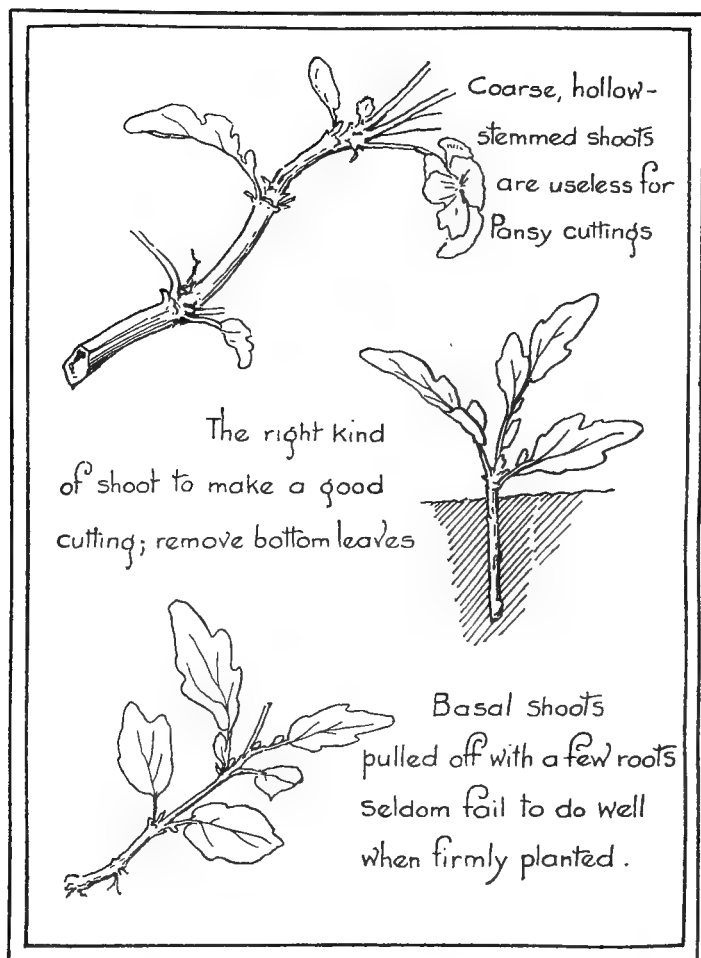


Privet Cuttings
strike very readily
in sandy soil,
prepare as shown



After a spell
of frost
firm the
ground again
as cuttings get
"lifted", thus preventing rooting.





green cuttings. If the leaves are large it is usual to cut them in half.

When all the cuttings have been inserted they should be watered through a "rose" on the spout of the watering-can; this will settle the soil round about them. They are then placed in the propagating case and this is closed. Every day the case should be opened for half an hour or so to allow superfluous

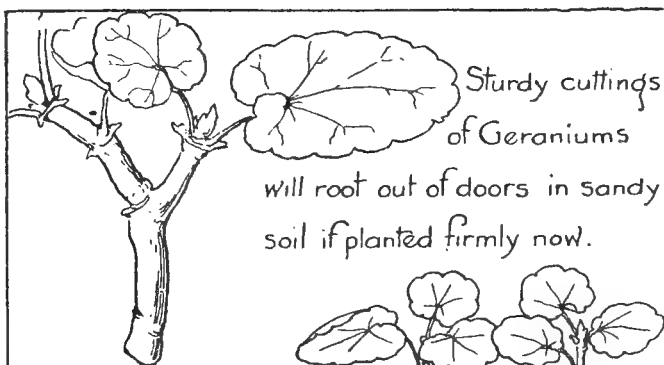
moisture to escape. It is unlikely that further watering will be necessary, but the cuttings must be syringed daily in bright weather. If a propagating case is not available, a box covered with glass will do.

When it is noticed that the cuttings are beginning to grow, it may be taken for granted that they are rooted, and some of them should be

examined by turning the whole potful carefully out. If they are nicely rooted they must be repotted singly in small pots in rather sandy soil, and may be taken out of the propagating case.

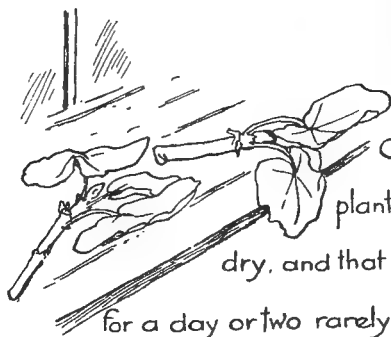
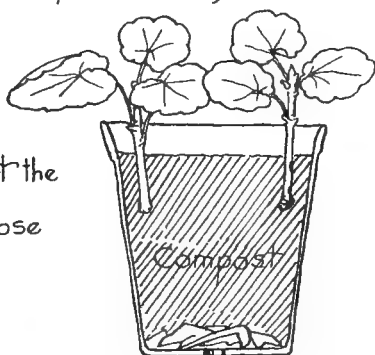
Cuttings with a "Heel." It is sometimes advised that cuttings should be taken with a "heel"; this means that when the shoot is

removed from the plant a small piece of the stem to which it is attached is cut off with it—only a very thin piece is necessary. If the amateur finds that he has no success with green cuttings, he should try taking them with a "heel" of the old wood; sometimes they form roots more certainly than those made from the green soft shoots alone.



Sturdy cuttings
of Geraniums
will root out of doors in sandy
soil if planted firmly now.

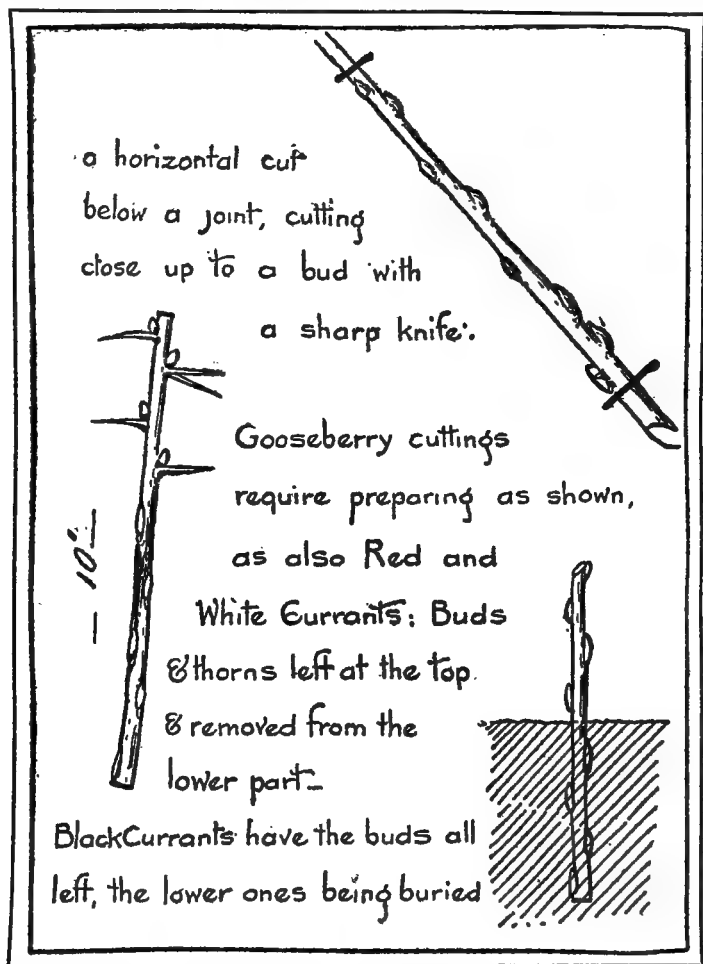
It is well to insert the
cuttings if in pots close
to the sides



Cuttings taken from a
plant that has been kept
dry, and that have been dried off
for a day or two rarely fail to root.

Hard or Woody Cuttings. Cuttings from the firm, or ripened, "woody" shoots are used in the propagation of trees and shrubs; they are inserted out of doors in

selected and a narrow, straight-backed trench, 6 or 8 inches deep, is taken out with a spade. Sand is scattered freely in the bottom. The cuttings should be from 8 to 12



autumn—in late October and in early November. Many leaf-losing ornamental shrubs, Roses, and bush fruits, such as Gooseberry and Currant, can be increased in this way. A plot of well-dug ground is

inches long; they are cut immediately beneath a joint to form the base.

In preparing cuttings of Gooseberry and Red and White Currant, all the buds are cut out except three



A paved path between borders of hardy perennials. The crevices between the stones filled with cement to prevent the growth of weeds.



Double Hollyhocks are handsome, old-fashioned flowering plants which are in full beauty in late summer. They do not grow so tall as the single-flowered hollyhocks and the blooms last longer.



A bowl of summer Roses. Modern varieties flower almost continuously throughout the summer and early autumn months and provide numerous flowers for cutting for use indoors.



The best of the annual Sea Lavenders, *Statice Suworowi*, which has tall spikes of carmine rose blooms that last well when cut.

or four at the top. The cuttings should be inserted at about 6 inches apart against the flat back of the trench, a little soil is placed in and made firm, then the remainder is filled in. The depth of the trench will vary according to the length of the cuttings; it should be so arranged that half the cutting is beneath the soil. As a rule the cuttings are left undisturbed for a year. Some of them may be ready for transplanting in spring, but it is usually safer to leave them until autumn.

Evergreens are increased by cuttings inserted in a bed of sandy soil made up in a cold frame in August or September. They are placed at about 6 inches apart and made firm at the base; the frame must be kept closed for six weeks, except for a slight daily airing for half an hour or so.

Root Cuttings. A few plants are commonly increased by root cuttings; for instance, the blue Alkanet or Anchusa, Japanese Anemone, Burning Bush or Dictamnus, ornamental Seakale, and Oriental Poppy. Pieces of the roots should be cut off in late summer and placed horizontally at an inch or so deep in a box of sandy soil kept in a frame for the winter. In spring the roots will start into growth, and may be planted out of doors in April.

Amateur gardeners are strongly advised to take cuttings of any of their favourite shrubs and plants of which they need an increased stock. One successful amateur grower, whenever he cut off a shoot of a Rose or other shrub, was in the habit of placing it in the ground in the hope that it would form roots, and in this haphazard way he raised a large number of kinds.

It is far better, however, to follow the orthodox practice of taking out a small trench and partly filling it with sand when cuttings are put in the ground out of doors. An important detail is to make the soil firm at the base of the cuttings, not at the top.

Some cuttings, those of rambler Roses, for example, if inserted out of doors in autumn, are often well rooted by the following spring, and can then be transplanted; but as a rule it is wise to leave cuttings undisturbed for a year, so that they shall be really well rooted before they are moved.

Cuttings of Pinks, Pansies, Violas, and many other plants will form roots if set in sandy soil out of doors on a shady border in summer and covered with a hand-light. The hand-light ought to be ventilated daily for a few minutes to get rid of superfluous moisture; otherwise it must be kept closed until the cuttings are rooted.

CHAPTER 39

Layering Shrubs and Plants

AN easy means of propagating one's favourite flowers, shrubs or fruits is layering. This method is carried out by burying a portion of the stem or branch of a plant without entirely severing it from the parent plant until an independent root system has formed. A sharp knife, wire or wooden pegs, and a few short sticks to hold the layers firm and upright are required for layering.

The sharp knife is to trim, tongue and prepare the growths to be layered. The wire or wooden pegs are required to hold the stems firmly in position underground. They are usually placed on the stem or branch just clear of the tongue or twisted portion of the stem. Hairpins are frequently used for small stems.

The short sticks are used to hold the branches of shrubs and fruit bushes firm and upright, so that the "tongue" on the stem is kept open, or to make a bend in the stem to check the flow of sap, and so cause the layer to make roots more quickly and be independent of the parent.

The best time for layering varies to a certain extent with different plants. For Pinks, late June and July, and for border Carnations July and August are the best periods—as soon as flowering is

over. Uncommon rock plants which are not readily propagated by division can be layered in summer or autumn after flowering. Autumn, when growth has finished for the season, is the best time to put down layers of shrubs, climbing Roses, Currants, Gooseberries, and Loganberries, but no hard-and-fast rule need be followed—just layer a branch or two as required whenever the opportunity arises, providing the ground is in suitable condition.

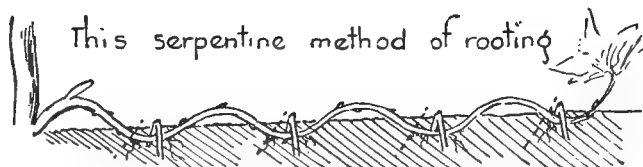
It is usually necessary, or at least desirable, to add fresh soil and sand to the ground when putting down layers, little or much according to the nature of the soil. As much as 50 per cent. or more of coarse sand and leaf-mould may be added to heavy and poor soils, to work in immediately round the stem to encourage the formation of roots.

Having removed the old flower stems of Pinks and border Carnations, cut off the weak growths and remove the leaves from the stems carefully up to the point to be tongued and buried in the ground. Loosen the soil round the plants with a hand fork, working in plenty of coarse grit and leaf-mould or rich sifted soil.

To form the tongue, commence to cut below a joint with a sharp knife, gradually sloping in to the middle of the stem, the cut being

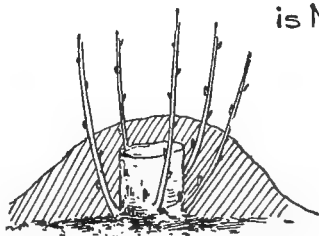
half an inch or rather more in length. Peg the stem firmly into the soil with the tongue open and cover with the prepared soil. It is important that these layers—in fact,

tings. Notable examples include Magnolia, Hamamelis or Witch Hazel, Rhododendrons, including Azaleas, and Clematis. Although old hard-wooded branches are of



long shoots of Clematis. Loganberries etc

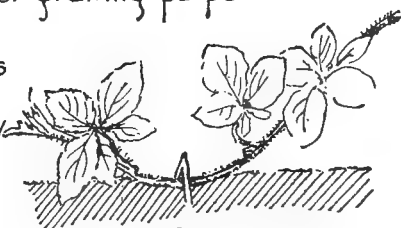
is Nature's own method.



Layers from a cutback broadleaved English Apple stock

can be separated from the stool in November for planting out for use as 'stock' later on for budding or grafting purposes.

Loganberries can be quickly rooted by pegging down



the tips of new shoots.

all layers—should not become dry during the process of rooting.

Layering is a valuable method of propagating many shrubs and trees that are not easy to increase by cut-

tings. Notable examples include Magnolia, Hamamelis or Witch Hazel, Rhododendrons, including Azaleas, and Clematis. Although old hard-wooded branches are of little, if any, value for layering, it often happens that healthy two or three-year-old branches of good size are available for layering, which usually means that in two or three

years good plants are provided quicker than by any other method.

There are few shrubs that cannot be propagated by layering, provided there are branches that can be brought in contact with the soil without being broken. Even this difficulty can be surmounted by filling a box with sandy soil and placing it on stilts immediately under the branch. In this case the most important condition is to keep the soil moist until rooting has taken place.

The average length of the shoot may be between 6 and 18 inches, but it is sometimes allowed to be longer in the endeavour to obtain a good-sized specimen in a short time.

Several methods are adopted to induce the formation of roots. The stem may be tongued as with Carnations, taken in both hands and twisted to crack the bark, a portion of the bark on the under-side scraped away, or a piece of wire bound tightly round the stem just below where the development of roots is desired.

Layering Fruit Bushes. Gooseberries and Red, White, and Black Currants are among the easiest subjects to layer. It is sufficient to dig a shallow trench, space out the branches and place soil on them. Similarly, rambling and climbing Roses, Loganberries, and cultivated Blackberries can be propagated readily by layering the new

growths of the year in autumn. Bury the branches 2 or 3 feet from the end, and stake the ends upright so that there is a sharp bend in the stems below the surface of the ground.

Certain rock plants and the hardy Heaths will form roots on their branches if these are well earthed up with rich sandy soil, without making incisions or tongues in the branches.

The layering of Clematis is best done in autumn when the year's growth is complete. It is important to prepare a compost of good soil containing plenty of old mortar rubble or chalk, in which to layer the stems. Bury several inches of the stem 12 to 18 inches from the end, peg it firmly in the ground and stake the end up straight. Place a large flat stone or piece of crazy paving stone on the ground above the stem to keep the soil cool and moist.

The time it takes for the different kinds of plants and shrubs to form roots is as variable as are the many kinds of plants it is possible to propagate by layering. The two extremes may be said to be represented by Carnations and Pinks, which root in 4 or 5 weeks, to Magnolia, Hamamelis, and Rhododendron, which usually take about two years. The layers of shrubs like Forsythia, Diervilla, Laurel, and Veronica will root in 12 or 15 months.

CHAPTER 40

Increasing Perennials by Division

THE propagation of hardy border perennials by division of the clumps or roots is the most generally practised means of increasing the stock. This method is practised because it is simple and requires no greenhouse or frame, and the new plants are facsimiles of the old ones, whereas seedlings may vary little or much in colour of flower and growth. Further, the flowering of the plants is little affected, unless the clumps are divided into very small portions.

In a garden with a representative collection of herbaceous perennials, the increase of the plants by division is practically continuous through the year. Most of the work is done when the weather is mild and the ground not too wet, between October and March. A useful general rule to follow is to divide spring and early summer flowers during the autumn and early winter. We may take as examples Lupins, Oriental Poppies, Aquilegias, and Doronicums. Plants which flower from August to November may be propagated in late winter and early spring. These include Michaelmas Daisies, Border Chrysanthemums, Sedum spectabile, and Perennial Sunflowers.

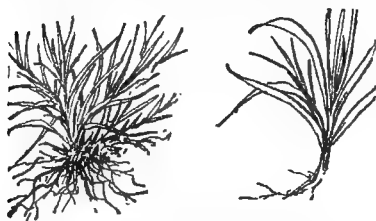
After the lifting, dividing, and replanting, the roots will be

practically lifeless for some time. It would not harm such plants as Michaelmas Daisies, for instance, to take them up in mid-winter, but the Dropmore Alkanet and Lupins, for example, might be damaged, and might fail to start into growth in spring. If these are divided and replanted during October or September, when the ground is warm and the weather mild, they make new roots, and become established in the new place before winter. Similarly, in early spring, if the propagation of important plants is done towards the end of February and during March, the weather and ground conditions are rapidly improving, with the result that they commence growth at once. The Japanese Anemone, in particular, should not be disturbed until March is well advanced ; as it blooms until late in the autumn it cannot be lifted then.

Other things, however, being favourable, choose October and November in preference to the spring for the majority of plants, and for this reason. When a dry spring or summer follows early spring planting, considerable watering will be necessary, and even then the plants seldom make such good growth as those moved in autumn, for the latter are well established by April or May. In

heavy soils dividing and replanting are frequently done in March. Sometimes it is thought worth while to lift the clumps in November and store them away safely in a sheltered corner in light soil until spring. This gives an opportunity of cultivating the ground in winter and of leaving the soil exposed to the action of the weather.

Dealing with plants which it is desirable to divide between March and September it will suffice to name a few notable examples. April is the best month to transplant the large clumps of the Torch



Pinks may be lifted in September and separated into pieces for replanting.

Lily (*Kniphofia*). During May it is usual to divide and replant Violets. In June and July popular spring-flowering plants are propagated; notable examples are Primrose, Polyanthus, double Daisies, spring Saxifrages, Arabis, Aubrietia, and Perennial Candytuft. August is the month to divide the Madonna Lily (*Lilium candidum*), and in September Pansies, Violas, and Pinks should be lifted, divided, and replanted.

While some kinds appear to be indifferent to rough treatment—a clump of Michaelmas Daisies or Helenium may be chopped into four or five pieces with a spade, for example—others require careful handling. In dealing with small clumps use two hand forks, thrust

in back to back, and force the handles away from each other. With large clumps—the herbaceous Phlox, for example—two ordinary digging forks may be similarly employed with satisfactory results. The number of pieces into which a clump may be safely parted is a point worthy of consideration. It is not desirable to split up a clump of Delphiniums into more than two, three, or four pieces. On the other hand, quite small pieces of the Michaelmas Daisy are satisfactory; one fair-size clump may yield, perhaps, a dozen



Vigorous perennials are divided by using two garden forks in the way shown.

pieces if this number is required. In nurseries, where large numbers of plants are needed, the clumps are frequently divided up into single "crowns," each with a few roots attached. While the best of the pieces may be planted directly in the border, to ensure every piece growing they are usually potted and placed in a cold frame for two months or so.

When the stock of plants is abundant always select the pieces on the outside of the clumps for replanting. These are always the best. If, in replanting a border, the clumps are lifted and have to remain out of the ground for several days, place leaves round them, covering them with a mat as a protection from frost.

CHAPTER 41

Lime: How and When to Apply It

THE results obtained from an application of lime to old garden soils which have been manured regularly are often remarkable, but lime is frequently applied in haphazard fashion whether the soil happens to be deficient in it or not. To find out whether lime is present in the soil or not is very simple. Take a quantity of soil from various parts of the garden and mix well together. Place a little in a tumbler and make it into a paste by adding water. Pour a little muriatic acid into this paste, and if much effervescence results the soil contains sufficient lime, while little or no effervescence indicates a deficiency. In the latter case lime can be added to the soil with certain advantage.

Lime can be obtained in various forms, and the amateur may be puzzled to know which to use for the best. First of all there is quicklime. This is burnt lime straight from the kiln, and should be preferred to any other form. It is usually in the form of lumps which slake down into powder when exposed to air, or much more quickly by means of water. Sometimes it can be obtained ground down. Builders will usually supply small quantities. Soil which has not been limed for a number of years may have 1 lb. per square yard at digging time.

Slaked lime is simply quicklime crumbled by the action of moisture. If in paste form it is difficult to apply evenly, but a rather heavier dressing can be given than where quicklime is used. Apply at the same time. Carbide refuse, obtained by making acetylene gas, is similar to the foregoing, and may be used similarly except that it is advisable to leave it on the ground a few weeks to purify.

Gas lime is cheap but contains poisonous properties, and must therefore be exposed to remove harmful contents. It destroys ground vermin. Apply in autumn, 1 lb. per square yard. The form of lime called gypsum may be mixed with farmyard manure with advantage, whereas other forms should be applied separately. It contains sulphur in addition to lime; 1½ to 2 lb. per square yard.

These are the chief forms of lime, but, in addition, chalk, mortar rubbish, and old plaster may all be applied with considerable advantage to soils needing lime. These latter are invariably mixed with the soil where fruit trees are being planted. The application of lime to well-cultivated soils sweetens them where they have become sour by constant manuring. Acting on the humus in such soils, it liberates plant foods and renders them available, whereas without lime

they would remain "locked up." Its mechanical action on different soils is remarkable, as while it renders light, porous soils more adhesive, heavy land is considerably lightened. Considering these chemical and mechanical actions, it is not surprising that soils which have been limed show it plainly the following season. It should be remembered, however, that if annual liming is carried out the quantities applied should be much reduced; otherwise the soil may easily be exhausted in a few years.

Lime is best applied in winter; if it is applied late in spring its caustic powers act harmfully on plant life, and growth is crippled. Nearly all forms of lime, except chalk and gypsum, deteriorate

when kept. Those artificial manures which contain lime are superphosphates, most phosphatic manures, basic slag, bone manures, nitrolim, nitrate of lime, and gypsum. With the exception of basic slag, however, all are so poor in actual "lime" contents that liming is required. Basic slag is a lime-phosphate fertiliser which must be applied by November to give best results. Some slags now sold are of poor quality, and those who buy in quantity should be very careful. About $\frac{1}{2}$ lb. per yard or a stone per rod is now necessary. Old mortar rubbish, so often advocated for composts, is mostly sand, but it contains a little lime, of the nature of chalk, and, as such, is a safe form to use. Ground shells are practically chalk.

CHAPTER 42

Beautiful Annual Flowers

A NNUALS are invaluable, for many of them come into bloom a few weeks after seeds are sown out of doors. They all flower within a year, but having flowered they perish. There are hardy and half-hardy annuals; the former are sown out of doors in spring or in autumn; the latter are usually raised under glass in February or March, the seedlings being planted out of doors in May. They may, however, be grown by sowing seeds out of doors in late April or early May, for by the time they are well through the soil danger of severe frost is over. It is not wise to sow hardy annuals out of doors in autumn on heavy land, for many of the seedlings will perish in winter. It is, however, a good plan to sow them in boxes of soil in a frame or cold greenhouse; they then make finer plants than when seeds are sown out of doors in spring. The latter method is most generally practised.

Annuals are very beautiful when well grown and given proper space for their development, but if crowded they are short-lived and not satisfactory. Before the seeds are sown the soil must be well dug and the surface broken down by forking, hoeing, and raking. It is unwise to sow if the soil is wet and sticky.

Every effort should be made to

avoid sowing the seeds so thickly that the plants come up like mustard and cress; it is then very difficult to thin them out properly and the labour involved is considerable. There is a great temptation to sow the seeds thickly and to grow many more plants than there is room for, but it should be resisted.

How to Sow. The best way to proceed, having made the soil suitable for seed sowing, is to mark it out in squares. Lines are marked out from top to bottom, and then from side to side; the seeds are sown along the lines and the seedlings are thinned out until only those remain that are at the points where the lines cross. Thus the lines must be drawn at the same distance from each other as the seedlings are to be apart. When sowing Candy-tuft, for instance, the lines should be about 5 inches apart; for annual Chrysanthemum they ought to be 12 inches apart, and so on. When the seedlings come up in lines they are more conveniently thinned out than when the seeds are scattered broadcast.

Some of the taller annuals need a certain amount of support in summer, and this is afforded most conveniently by placing short twiggy pea sticks among them. It is important to remove faded flowers as far as is practicable, for

Flowers of the *Clarkia*, one of the most attractive hardy annuals.



Seeds are sown out of doors in spring to provide summer flowers.

attention to this detail prolongs the flowering period of the plants considerably. The following are some of the most attractive hardy annuals:

Hardy Annuals. *Acroclinium* has "everlasting" flowers in rose and white, very useful also for growing in the greenhouse in pots. *Alyssum*, white, fragrant flowers; the low-growing variety *Little Dorr* is invaluable as an edging to flower-beds, for it blooms throughout the summer.

Bartonia aurea, a handsome yellow-flowered annual reaching a height of 12 inches or so.



The common Pot Marigold, or *Calendula*.

The Tassel Flower. *Cacalia coccinea* is the scarlet Tassel Flower; it grows 15 inches high and bears orange scarlet handsome flowers. *Calendula* is the old-fashioned pot Marigold which seeds itself all over the garden if allowed to do so. The finer varieties should be grown, such as *Orange King* and *Lemon Queen*. *Candytuft* is very attractive; it is about 10 inches high, and the flowers are of many and varied shades of colour.



The Cornflower, of which there are blue, rose, and white varieties.

Clarkia and Coreopsis. *Clarkia* is one of the most attractive of all hardy annuals ; it grows 18 inches to 2 feet high and blooms for many weeks. It is well suited to autumn as well as spring sowing. The salmon-coloured variety, *Salmon Queen*, is very attractive. Annual *Chrysanthemums* are splendid

most brilliantly coloured of the annual flowers ; the typical kind is of orange yellow shade, but varieties have been raised of many other colours. This plant thrives best in light or well-drained soil in a sunny place, and should not be sown out of doors before April ; it grows about 12 inches high. Del-

The crimson Flax, *Linum grandiflorum rubrum*, a very showy hardy annual. Seeds are sown out of doors in spring.



flowers ; the plants reach a height of 2 feet or more, and bear single or semi-double flowers of many colours. They do splendidly from an autumn sowing. *Collinsia bicolor* is a dainty little annual about 10 inches high with lilac and white flowers. *Coreopsis*, or *Calliopsis* as it is often called, is a very free-flowering annual varying in height from 12 inches to 2 feet or more, and producing flowers in crimson, brown red, and shades of yellow ; very showy and useful for cutting.

Star of the Veldt. *Dimorphotheca*, or *Star of the Veldt*, is one of the

phinium (annual Larkspur) reaches a height of from 15 inches to 2 or 3 feet. The flowers are very showy and of various colours ; the rosy scarlet stock-flowered is one of the most attractive, though the single-flowered branching varieties are favourites with many.

Eschscholtzia, or Californian Poppy, is a beautiful annual, 12 inches or more high, with poppy-like flowers in yellow, rose, and other colours. It prefers light soil and a sunny place ; it often sows itself freely. *Erysimum Peroffskianum* is 12 inches or so high,

and bears a profusion of orange-coloured flowers; it does best if sown in autumn.

Godetia is a favourite annual, and both single and double varieties in many colours may be grown. It varies in height from 12 inches to 2 feet. Double Rose is one of the most attractive of all. Duchess of Albany, white, is also very beautiful.

The pink Hawkweed, or Hieracium, is well worth growing; it is about 18 inches high and blooms for many weeks. Helichrysum has large "everlasting" flowers in various colours that are useful for cutting for winter decoration; it grows 2 to 3 feet high. Hemp is grown for the sake of its green ornamental leaves, and reaches a height of 6 feet or more.

Ionopsidium acaule, or Violet Cress, is a tiny plant suitable for sowing in the rock garden; it bears small lilac-coloured flowers.

Leptosiphon is a low-growing plant suitable for an edging; the flowers are of various colours—rose, yellow, and so on. Lavatera, or Rose Mallow, is one of the most handsome of all annuals; the plants reach a height of 3 feet, and bear large mallow-like flowers of rose crimson colour. Linaria, or Toadflax, is of graceful, slender growth, from 9 to 12 inches high, and bears small snapdragon-like flowers in different colours; the mauve variety is one of the most attractive. The scarlet Flax, *Linum grandiflorum rubrum*, is perhaps the most gorgeous of all annuals when massed; the plant is of slender growth, and the large blooms are scarlet.

Night-scented Stock. *Matthiola bicornis* is the Night-scented Stock; it is about 12 inches high, and has

somewhat inconspicuous bluish-coloured flowers which, however, are deliciously fragrant in the evening. Mignonette is difficult to grow well in some gardens; it is most likely to thrive if sown on firm soil with which lime has been mixed.

Nigella, or Love in a Mist, is familiar to everyone: the blue flowers, surrounded by the delicately-cut green leaves, are very charming; the plants grow about 12 inches high. The dwarf, brilliantly-coloured varieties of *Nasturtium* are useful for sowing on poor ground in a hot, dry place; there they bloom profusely. The climbing varieties are equally showy, but neither type is suitable for rich ground, for there they become too leafy. *Nemophila* is a favourite blue-flowered annual about 6 inches high, and *Nycteria* is worth sowing for the sake of its fragrance in the evening.

Phacelia campanularia grows 9 or 10 inches high and has bright blue flowers. Annual Poppies are numerous. The Shirley Poppies are favourites, and the varieties of the grey-leaved Opium Poppy are very showy with their large double brilliantly-coloured heads of bloom.

The pink *Silene pendula* makes a delightful show in spring from seeds sown in August. The annual Sunflowers which reach a height of 3 or 4 feet and bear flowers of various colours, shades of red and yellow, are worth growing. Virginian Stock is a showy little annual, a favourite for edging; it is of low growth, comes quickly into bloom, and has flowers in crimson, rose, and white.

Half-Hardy Annuals. Seeds of half-hardy annuals are sown in March in boxes of soil in a frame or

greenhouse, the seedlings being planted out of doors late in April or early in May. They are easily raised, but care must be taken that they are not allowed to become spoilt in the seed boxes, as they are liable to do through overcrowding. If they cannot be transplanted before they are put out finally, they must be sown thinly or thinned out to give them room for development.

Asters are great favourites ; there are many types, the single-flowered China, Late Beauty, Californian Giant, and Ostrich Plume being very handsome. Antirrhinum or Snapdragon is often treated as a half-hardy annual, seeds being sown in a heated glasshouse in February to produce plants that will bear flowers the same year. The seedlings must be transplanted to other boxes before they become crowded, and will be ready to be planted out of doors in April or May.

Balsam is usually grown as a greenhouse plant ; out of doors it is rather liable to be damaged by bad weather. The plants must be grown in rich soil and without the



Flower of a double variety of annual Aster.

least check, repotting being done as soon as it becomes necessary. Modern strains of the Balsam have large double blooms of rose, mauve, salmon, and other shades of colour. Tuberous Begonia, which is now represented by so many brilliantly-coloured varieties, will bloom the same year if seeds are sown in a heated greenhouse in January. The seeds are very small, and the seedlings need careful handling ; if grown under glass and hardened off, they will be ready to be planted out of doors early in June.

Carnations of the Marguerite type are most attractive flowers ; seeds should be sown in January or February in warmth to furnish plants for putting out in May. The plants bloom throughout a prolonged period, and if lifted carefully and potted in September they will continue flowering if placed under glass. They may be raised from seeds sown in a cold greenhouse in



The Cosmos, a half-hardy annual with long-stemmed flowers of various colours.

September. *Cosmea*, or *Cosmos*, the Mexican Daisy, is a tall plant with large daisy-like flowers in rose, crimson, and other colours. The early-flowering strain should be grown from seeds sown in February, the seedlings being planted out of doors in May. *Kochia trichophylla*, or Summer Cypress, is a symmetrical leafy bush about 2 feet high; in summer its light green colour is attractive, and in autumn the leaves become tinted.

African Marigolds (*Tagetes*) are tall, vigorous plants which in late summer bear large, showy heads of bloom of orange and yellow shades; they make a handsome display. The French Marigolds, also varieties of *Tagetes*, are familiar plants 9 or 10 inches high, often

used as an edging; they bear an abundance of yellow and brown flowers.

Nemesia is one of the finest of all half-hardy annuals; the plants grow about 12 inches high, and bear flowers of many charming colours. Seeds should be sown in March, the seedlings being planted out in May. The *Nicotiana*, or Tobacco Flower, is valued for the sake of its white flowers that are so fragrant in the evening; it reaches a height of 3 feet or so. There are varieties with flowers of various colours.

Phlox Drummondii is about 12 inches high and bears heads of bloom in scarlet, white, mauve, and other colours. *Portulaca* is a very showy low-growing annual.

CHAPTER 43

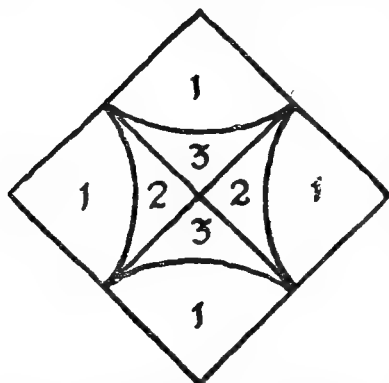
Flowers of Spring

NO flowers are more welcome than those of spring—the Wallflower, Polyanthus, Primrose, Arabis, Aubrietia, Alyssum, Iberis, and the familiar spring-flowering bulbs, such, for example, as Daffodil, Tulip, and Hyacinth. They especially appeal to the amateur because they are hardy and easily grown, and because it is possible to create some charming colour schemes with them. What, for example, can be more attractive than a flower-bed planted with the white Evergreen Candytuft (*Iberis sempervirens*) and one of the brightly-coloured Aubrietias, such as Dr. Mules or Pritchard's Ar, purple; Fire King, crimson, or Bridesmaid, pink? White Mossy Saxifrage or double white Arabis can be used as a groundwork for many brilliantly-coloured Tulips, and the planter may arrange colour schemes to his heart's content.

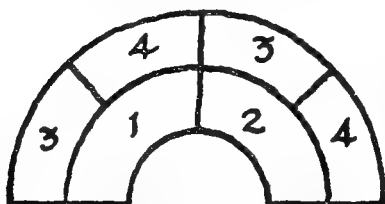
The dwarf Phloxes, *subulata*, rose pink, and Newry Gem, pale mauve, too, look especially well if planted among Evergreen Candytuft or white Mossy Saxifrage. With Wallflowers and Tulips one may arrange many showy combinations. There are Wallflowers in bright yellow, pale yellow, orange, dark red, plum colour, and other shades, and as for Tulips, they are obtainable in almost every colour, except blue.

Colour Schemes. How striking, for example, are the following associations: Yellow Wallflower with a dark Tulip such as La Tulipe Noire, the rose red Pride of Haarlem, the pale lilac variety Lantern, or the pink Tulip Clara Butt; dark red Wallflower among the yellow Tulip H. G. Moon or *gesneriana spathulata*; primrose - coloured Wallflower and pale mauve Tulip the Rev. H. Ewbank; and so one might go on indefinitely. With Hyacinths alone one can arrange innumerable colour displays; they look best when a bed is planted in blocks or sections of distinct colours.

A particularly brilliant, though somewhat gaudy, bed may be planted with the yellow Alyssum and the scarlet and yellow Tulip Keizer's Kroon, or with the large white Tulip White Swan. Violas, Pansies, Primroses, and Polyanthus, as a rule, look best when each is planted to fill a bed; they do not mix well with other flowers, except in the case of self-coloured varieties of Tufted Pansy or Viola. A bed of mixed colours is rarely so attractive as one in which a few distinct colours are made use of. Neither do Daffodils and Narcissi lend themselves well to mixing with other flowers; they look best when filling a bed. Other flowers that are



(1) Aubrietia, (2) Siberian Wallflower, (3) Tulip Inglescombe Pink.



(1 and 2, Siberian Wallflower, (3 and 4) Forget-me-not and Tulip Pride of Haarlem, red.

often employed for spring flower-beds are Daisies, Poppy Anemones, the orange yellow annual Erysimum, and the pink Silene.

How the Flowers are Grown. The disadvantage of spring bedding, so far as the amateur with a small garden is concerned, lies in the fact that a piece of ground must be devoted to cultivating the plants during summer, and it is often a matter of difficulty to allot any for this purpose. The only alternative is to purchase the plants in early October and put them in the beds then. If only a few are required, this is probably the best method to adopt. However, if the necessary plot can be devoted to their cultivation, it should be done,

for the work is full of interest and offers no difficulty.

Wallflower, Erysimum, Pansy, Polyanthus, and Primrose are raised from seed sown out of doors in May or June, the seedlings being transplanted when large enough, and finally planted in the beds in early autumn. Polyanthus and Primrose may also be increased by taking up the old plants when they have finished flowering, and re-planting the separated portions. Aubrietia, Alyssum, Arabis, dwarf Phlox, and Iberis or Evergreen Candytuft are increased by means of cuttings taken in June and inserted in boxes of light soil placed in a frame, or in sandy soil on a shaded border and covered with a handlight.

Forget-me-nots are raised from seed, the easiest way being to take up a few roots and plant them on the reserve bed. Self-sown seedlings will soon spring up. Daisies are increased by division after flowering. The roots of Poppy Anemones are planted in September and October.

Tulips, Daffodils, and Hyacinths are planted in October and early November. When the flowers are over, the bulbs of Daffodil and Tulip should be taken up and re-planted on a reserve plot, there to remain until the leaves have turned yellow. They are then taken up, dried and stored until autumn, the finest bulbs alone being planted in the beds; the smaller ones may be "grown on" for a year or two until they reach flowering size. Hyacinths are of no value for planting in formal beds a second year, though they are quite useful for planting out in odd corners in the garden. They continue to produce flowers, though of inferior quality

to those of fresh bulbs. To obtain *Violas* for spring flowering the plants should be taken up when their display is over and be divided, small pieces having roots attached being replanted on the reserve border.

Lovely Spring Flower-Beds :
Yellow Wallflowers surrounded by a broad edging of Forget-me-nots.

Dark red Wallflowers with a broad edging of double white *Arabis*.

A round bed divided into three sections and planted with *Alyssum saxatile*, yellow ; *Aubrietia*, purple ; and *Arabis*, white.

Siberian Orange Wallflower, edged with *Aubrietia*.

Forget-me-not as a groundwork with yellow Tulips *Inglescombe Yellow* or *Bouton d'Or*.

A mixed groundwork of purple *Aubrietia* and *Iberis sempervirens* (white perennial Candytuft), with Tulips *Clara Butt*, soft rose, or *Suzon*, rose pink.

Groundwork of *Violas* *Maggie Mott*, *Primrose Dame*, and *White Swan*. Tulips *Madame Krelage*, rose carmine, and *Bartigon*, red, white base.

Mixed winter-flowering Pansies, planted with Tulips *Princess Elizabeth*, soft rose ; *Baronne de la Tonnaye*, rose pink ; and *Le Nôtre*, rose pink.

Groundwork of white Mossy Saxifrage, planted with Tulip *Bouton d'Or*, yellow.

Mixed Polyanthus, planted with Tulip *Panorama*, dull red, flushed bronze or rose.

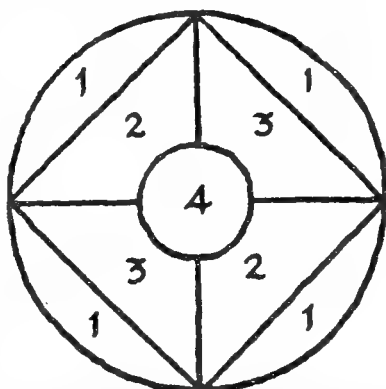
A square or oblong bed, having a diamond-shaped centre, the points of which come right out to the edge of the bed ; groundwork of white *Arabis* interplanted with Tulip *Cottage Maid*, pink. The

four corners of the square could be planted with *Myosotis*.

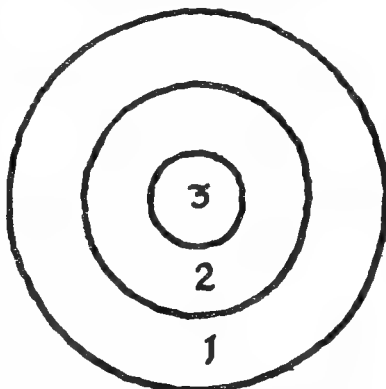
Wallflower *Vulcan* planted with *Narcissus Emperor* and edged with mixed Polyanthus.

Groundwork of crimson Polyanthus, planted with *Narcissi Golden Spur* and *King Alfred*.

For a round bed, the centre carpeted with crimson Polyanthus interplanted with *Narcissus Golden Spur*, surrounded by a belt of white *Arabis* interplanted with *Hyacinth*.



(1) Forget-me-not, (2) Siberian Wallflower, (3) Tulip *Clara Butt*, rose pink, (4) Tulip *Mrs. Moon*, yellow.



(1) Forget-me-not, (2) Siberian Wallflower (*Cheiranthus Allioni*), (3) Tulip *Bartigon*, red, or *Grenadier*, orange scarlet.

CHAPTER 44

On Choosing a Greenhouse

HAVING decided to invest in a greenhouse, the prospective purchaser has to choose whether he will have a "span-roof" or a "lean-to." The former is really more satisfactory, generally, but if there is a convenient wall available against which the "lean-to" can be built, then this type may very well be chosen. Let us consider the merits of each kind.

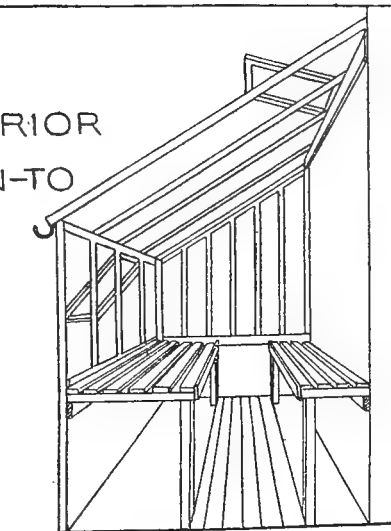
The Lean-to Greenhouse. If the "lean-to" is placed against a hot wall, facing south or south-west, and the wall forms also part of the dwelling-house, no artificial warmth will be required from May to September, and comparatively little at other seasons. A greenhouse such as this is especially well adapted for growing Vines, Peaches, climbing and pot Roses, and flowers for winter, autumn, and spring. During high summer it is liable to get very hot, and few flowering plants, except Cacti, are then satisfactory. However, an ideal summer crop is found in the Tomato. If the plants are in large pots, say those 9 or 10 inches in diameter, they thrive excellently. A "lean-to" greenhouse built against a wall facing east or north is of less value, owing to its shady situation, for fruit and for winter flowers. It is, however, useful during summer, on account of its coolness, and is generally well suited to

the cultivation of Ferns, Palms, and other foliage plants and some Orchids, which like moist and shady conditions.

The span-roof greenhouse, if in an open spot, is generally to be preferred. It is possible, in the hottest weather, to keep it cool by ventilating freely and by shading, while it gets the maximum of light during winter. One can grow all the usual greenhouse plants there, because it is possible to provide such conditions as may be necessary, while in the case of the "lean-to" special conditions prevail, and the only way to make the most of them is to grow plants suited to those conditions.

The least expensive way of obtaining a greenhouse (other than by building it) is to purchase one the woodwork of which is already complete in sections. One has then only to fix these firmly in position by means of bolts, and to do the glazing. Many horticultural builders advertise greenhouses of this description; they are of various sizes, with base of wood, which must be fixed upon a perfectly level foundation of bricks raised above the ground level. If one can afford it, and the circumstances render it worth while, it is certainly advisable to have a greenhouse with brick instead of wood base,

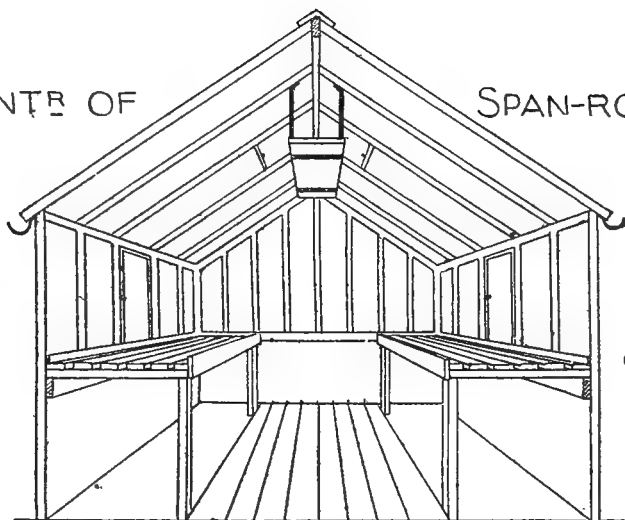
INTERIOR
LEAN-TO



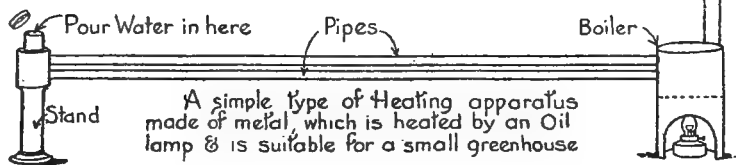
OF A
GREEN
HOUSE

INTR OF

SPAN-ROOF



Chimney



for it is warmer, and if properly built will last a lifetime.

The question of heating also largely depends upon the expenditure to be incurred. A really well-made greenhouse is preferably heated by a small boiler and hot-water pipes, which will be installed by the builder; but there are several substitutes. The simplest and most convenient method is to heat the greenhouse by means of gas; whether or not this is a cheap plan depends upon the price of gas locally and the manner in which it is used. But for convenience it is unequalled. It is necessary to have a small boiler installed in the base wall of the greenhouse, and the gas jet must be outside the house. Pipes are connected with the boiler, for the warmth is transmitted by hot water, and the gas jet merely supplants the coal or coke fire.

A most convenient form of heating apparatus, which I have used for some years in a small greenhouse, is arranged as follows. The heating is by means of a duplex-burner oil lamp inside the greenhouse; but—and here is its chief merit—the plants suffer no harm from the fumes. The apparatus consists of an upright zinc stand, about 2 feet high, some 3 inches of the upper part being enclosed and forming the boiler, the lower part being open for the insertion of the lamp. Connected with the boiler are two zinc pipes, one flow and one return, which run the length of the greenhouse underneath the staging. They are supported at the far end by a stand of such a height that the pipes here are slightly higher than near the boiler. Immediately above the stand is a box-like opening through which water

is poured into the pipes. A narrow chimney, reaching from near the lamp chimney and passing through a zinc pane in the roof, effectually disposes of all fumes, and the atmosphere is quite pure.

To keep the lamp burning brightly a small iron pipe is laid horizontally from near the base of the lamp to a small hole in the woodwork of the greenhouse, thus assuring a constant supply of fresh air to the lamp. It is essential, of course, that the lamp be kept thoroughly clean and properly trimmed and attended. If, however, when first lit, the wicks are kept low for four or five minutes, thus allowing the glass chimney to get warm, they may subsequently be turned up without danger of smoking. Such an apparatus as this, which costs £2 to £3, will maintain a night temperature of from 40 degrees to 45 degrees (according to the severity of the weather) during winter. If filled in the evening the lamp will burn all night, and the cost is only a few pence.

When the heating of a larger greenhouse is under consideration, it is necessary first to find its cubic contents, then to determine the minimum winter temperature required, because upon the latter must depend the size and extent of the pipes. Four-inch pipes are generally used, and to maintain a winter night temperature of from 45 degrees to 50 degrees, 40 feet of piping are needed for each 1,000 cubic feet; for a temperature of from 50 degrees to 60 degrees, 50 feet of piping per 1,000 cubic feet. The way to find out the cubic contents of a greenhouse is to multiply the inside length and width and the height from the floor to halfway up the roof.

CHAPTER 45

Greenhouse Flowers to Grow from Seeds

AURICULA. There are two chief types of florist's Auricula, the Show and Alpine. The former are daintier and less easily managed with success than the Alpine kinds. The leaves of some Show varieties are so densely covered with "meal" as to be almost white. The blooms are classified according to colour ; thus there are green-edged, white-edged, grey-edged, and selfs. In each case a ring of "paste" or meal-like substance surrounds the centre of the bloom. It is the presence of this substance in Show Auriculas that renders it necessary to keep them always under glass, or so situated that glass protection can be given if necessary. The green-leaved Alpine Auriculas, on the other hand, are less delicate and usually more vigorous, being suited for cultivation in the open garden. Some of the varieties, however, are very beautiful and are extremely popular for growing in pots.

Auriculas are increased either by seeds or by offsets. The seeds may be sown as soon as ripe in late summer, or kept until February and then sown. Often they germinate irregularly, so it is not wise to throw the seed pans away until some months afterwards. The seeds should be distributed thinly on sifted soil and only slightly

covered ; a cool frame is the best place for them, and the pots or pans ought to be covered with glass and shaded if necessary. Offsets are taken off in spring as soon as they are large enough, and are placed round the sides of flower-pots filled with sandy soil and kept in a somewhat close frame for a few weeks. The time to repot such Auriculas as need it is as soon as the flowers have faded ; the following is the routine of one who has achieved great success with these flowers :

"Obtain good turfy loam 4 parts, leaf-mould 1 part, and silver sand 1 part, and a few pieces of broken charcoal mixed with it. Mix all well together a little time before they are wanted for use. Pots $3\frac{1}{2}$ to 4 inches should be used, with about 1 inch of crocks at the bottom of each pot. The old soil should be shaken off the roots of the plants to be potted, offsets should be removed and placed round the edge of the pots, the same as cuttings, and these offsets potted off singly into small pots as soon as roots are formed. Before repotting, cut off, if necessary, a portion of the main taproot. In potting press the soil rather firmly round the roots, and when the plants are potted place them in a cold frame. Keep the lights rather close for a few days, and do not

water them until the third day after potting. When the newly potted plants are established the frame lights should be removed altogether, except in heavy rains."

Throughout summer the plants ought to be kept in a frame at the foot of a wall or fence facing north; in winter the frame should be in the sunniest position available. No fire heat is required, but in unusually cold weather it is advisable to protect the frames by means of mats. In winter water must be given sparingly, only sufficiently often to keep the soil slightly moist. Decaying leaves must be removed and ventilation given whenever the weather allows of it. In February a top-dressing of rich soil is beneficial, a little of the old soil being first removed.

A few good Alpine Auriculas are Argus, Blue Jay, Claude Halcro, Dean Hole, Ettrick, Firefly, Mrs. J. Douglas. Of Show varieties choose the following: green-edged, Abbé Liszt and Wm. Henwood; white-edged, Acme and Heather Bell; grey-edged, George Lightbody and Richard Headley; selfs, Harrison Weir and Peggy Gibson.

Balsam. The Balsam is not such a favourite as it used to be, although in cottage windows it is still often seen. Unless one is prepared to grow the Balsam well, it is scarcely worth while attempting its cultivation, but really good plants are very attractive. The chief points are to provide rich soil, to repot as soon as ever a shift is necessary, and generally to see that the plants are not checked in any way. Seeds are sown in a greenhouse temperature of 50 to 55 degrees in April, the seedlings, as

soon as ready, being transferred singly to small pots. A suitable compost consists of loam with a little leaf-soil and decayed manure. The next shift will be to pots 6 or even 7 inches in diameter, similar compost being used. When the Balsams are well rooted in their final pots liquid manure may be given with advantage. During summer the plants thrive well in a frame.

Browallia. The Browallias are pretty plants, which have comparatively large, rather flat, violet blue blossoms during summer. The best of the perennials are *Browallia speciosa* major and *viscosa*, the latter having smaller blooms. *Browallia elata* (or *demissa*) is an annual bearing blue flowers, and will bloom in summer from seed sown in the heated greenhouse in March. The perennials may be grown from cuttings inserted in pots of sandy soil in spring; these are made from the young shoots, and to obtain them the stems of the old plants are shortened in February. The perennials, however, are usually treated as annuals, and will bloom the same year from seed sown in spring.

Calceolaria. Everyone knows the herbaceous *Calceolaria*, of which some fine plants are seen in greenhouses and at flower shows in May. The flowers are of most varied and brilliant colouring, and in splendour eclipse all other plants in bloom at that season. They vary from primrose to deep rich yellow and crimson, and the markings add further distinction of colour. Herbaceous *Calceolarias* must not be confused with the shrubby kind so freely used for summer bedding; the former are

BOUVARDIA



An attractive
Autumn flowering plant
for the amateur's green-
house. It is propagated
by cuttings in Spring,
these are made from
the fresh shoots on
the old plant.



COLEUS

A favourite greenhouse
plant with coloured leaves
it is very showy in Summer

The plants are
easily increased
by cuttings in
Spring.



grown from seed, the latter from cuttings. Seed is sown in May and June in pots or pans of sandy, sifted soil placed in a cold frame. The seeds are minute, and need not be covered except by a slight scattering of silver sand; it is necessary to keep the soil moist and shaded until the seedlings show through. When large enough to take hold of conveniently the seedlings must be transferred singly to quite small pots, using loam and leaf-soil with sand intermixed.

Provided the frame is in a half-shady position and the soil is kept moist though not sodden, the plants will make steady progress, and late in August or early in September should be repotted into 3½- or 4-inch pots, in which they will pass the winter. Cool, moist, and partially shady conditions during summer are essential to success; if allowed to get dry at the root, or if exposed to bright sunshine, *Calceolarias* will not thrive, and especially is harm likely to be done to the seedlings. For the autumn potting use a soil consisting of two-thirds loam, one-third leaf-soil, silver sand being freely intermixed. During winter a minimum temperature of 45 degrees is suitable; in fact, I have grown *Calceolarias* in an unheated greenhouse, and they have withstood several degrees of frost. It is not advisable, however, to allow the temperature to fall below 45 degrees (or perhaps 40 degrees in cold weather).

Watering must be practised carefully, for naturally the soil dries slowly, and water should be given only when the soil is fairly dry. In February the plants will be ready for the final repotting, and 6- or

7-inch pots are suitable; mix a compost of turfy soil two-thirds, leaf-soil and dried cow manure one-third, with a free sprinkling of silver sand. Cool, airy conditions during the next two months will ensure good progress, and in April the buds will begin to show. Green fly often attacks the plants, and particularly if they are grown in too warm a house. The use of Abol insecticide or Fumigen cones will keep this pest down. Every amateur who possesses a greenhouse ought to grow these showy flowers.

The shrubby *Calceolaria* used for summer bedding is a somewhat squat and uninteresting plant, but there are other shrubby kinds of great value for the greenhouse. They are of tall, graceful growth and flower throughout a long season. Some of the best are *Clibrani*, *amplexicaulis*, and *Burbidgei*. All have somewhat small, yellow blooms. The usual method of propagation is by cuttings in April, though seed is obtainable and may be sown in early summer.

C a m p a n u l a pyramidalis
(Chimney Bellflower). This is one of the most handsome of all greenhouse plants, and when in full bloom its stems reach a height of 4 or 5 feet, the blue flowers clustering around the upper part in profusion. This *Campanula*, though usually grown in the greenhouse, is hardy, and may be planted out of doors in autumn, there to pass the winter. It is treated as a biennial, and the seeds must be sown early, in March or April, to make sure of good flowering plants the following year. If sown under glass in pans of sifted soil the seeds will

soon germinate, and in due course the seedlings are put into small pots. During summer a cool frame is the place for them; in fact, they may remain in a frame throughout winter, but the latter should be in the sunniest place. Loamy soil with which a little leaf-soil is mixed forms a suitable compost. They are finally repotted in spring, in pots 7 or 8 inches wide, and then grown in the greenhouse, where they will come into bloom in early summer. Applications of liquid yard manure or artificial fertiliser should be given every ten days when the flower spikes show.

Carnation. It is not difficult to raise both Perpetual and Border Carnations from seed. Only the best seed should be obtained, and even then there will be a proportion of single flowers, from 10 to 15 per cent. If poor seed is sown half the blooms may be single. April is the time for sowing; the Perpetual kinds will bloom the following winter and spring, and the Border kinds the following year. If thin sowing in boxes of sandy soil in the greenhouse is practised and the soil is kept moist and shaded the seedlings will show through in a few weeks. The best plan is to pot each one singly in a $2\frac{1}{2}$ -inch pot, the Border kinds being planted out of doors when well rooted. They will yield an abundance of bloom the following summer. From the small pots the Perpetual Carnations are potted into 5- or 6-inch pots, in which they will bloom. They must be "stopped" when about 6 inches high, so that side growths may form. During summer the Perpetuals may be grown in a frame, and should be removed to the greenhouse in September. A winter

temperature of 50 degrees is suitable. It is important to use the correct potting compost, which consists of loam (turfy soil) with a little leaf-soil, crushed charcoal, and silver sand.

Celsia. The *Celsia* is rarely seen in an amateur's greenhouse, though it might with advantage be grown more frequently. In general appearance the plant resembles a slender Mullein (*Verbascum*), the upper part of the tall stem, 3 to 5 feet high, being covered in early summer with large, flat, soft yellow flowers. The *Celsia* is usually grown as a biennial; that is to say, seeds are sown in May to produce flowering plants for the following year. During summer a frame is the best place for them, and in autumn they are removed to the warm greenhouse. The final repotting, in early spring, should be into 6- or 7-inch pots, using loam with which a little dry, rotted manure and sand are mixed. *Celsia cretica* and *Celsia Arcturus* are the two kinds most commonly seen.

Cineraria. There are two chief types of *Cineraria*, the dwarf, sturdy plant that bears large flowers of brilliant colouring and the tall, branching plant that bears much smaller blossoms, usually not of such intense shades. The latter, which are known as the *stellata* type, are of greater decorative value than the former, and amateurs are advised to grow them in preference. One may have *Cinerarias* in bloom from December to late spring by making successive sowings of seed from April to the middle of June. The practice outlined for the cultivation of *Calceolaria* may be followed for *Cineraria* also, for they need very

similar conditions. The final repotting ought to be carried out in October, instead of in spring as for *Calceolaria*, and similar compost is suitable. A minimum winter temperature of 50 degrees is high enough, and it may fall to 45 degrees without harm being done. It is possible to increase *Cinerarias* by cuttings, which are made from shoots obtained by cutting back the old plants after the flowers are over. This method is useful when one wishes to perpetuate any special colour or form which might not come true from seed.

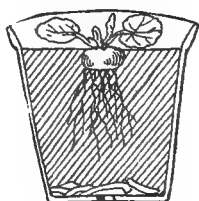
Cuphea. The *Cuphea* is a pretty greenhouse plant that bears narrow tube-shaped blooms in summer; it is often made use of for bedding out. Seeds are sown in warmth in February or March. A suitable soil consists of loam and peat with sand. Excellent plants may be grown in 5-inch pots, so only one repotting is required after the seedlings have been put singly in small pots.

Cyclamen. The greenhouse *Cyclamen* is in many ways a remarkable plant, and I cannot imagine one better suited to the happy-go-lucky amateur. For instance, I have a five-year-old plant that has never been taken out of its 5-inch pot since it was put into it, yet it blooms regularly each spring, and certainly the quantity of flowers increases if the quality does not improve. Moreover, this plant has been in an unheated greenhouse during several winters, and 4 degrees of frost have done it no harm. However, this is not the ideal way of growing *Cyclamen*, but is mentioned as showing that the veriest tyro can grow a plant that will withstand so much

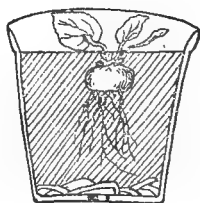
inattention. *Cyclamen* is slow from seed—one has to sow in August to obtain good flowering plants in the winter and spring eighteen months ahead—and the average amateur will probably prefer to purchase a few roots or corms (as they are technically called) in July, and forthwith start them into growth.

Cyclamen delight in cool, moist conditions during summer, and no position suits them better than a partially shaded frame containing a bed of ashes upon which to stand the plants. During winter they need the protection of a greenhouse or heated frame in which the temperature is not less than 50 degrees; it is wise to keep the plants near the glass, otherwise the leaf-stalks lose sturdiness. Remember that a dry, warm atmosphere is altogether inimical to *Cyclamen*, so even in winter keep the atmosphere moist. It will be found that *Cyclamen* seeds germinate in somewhat erratic fashion, and it is not possible to wait until all the seedlings are through before proceeding to pot them off singly in small pots. They must be attended to as becomes necessary.

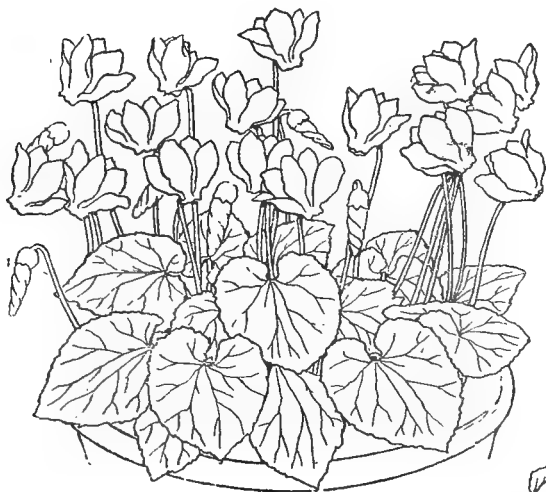
The point of chief importance in potting is to take care that the small corm or "bulb" is not buried; its base should be slightly embedded so that the corm rests upon the soil moderately firmly. A compost of turfy loam, leaf-mould, and sand is suitable for the plants in their earlier stages; but for the final potting, which will be ten to twelve months from the date of sowing, some dried cow manure and mortar rubble may be mixed in with advantage. *Cyclamen* need watering with considerable care,



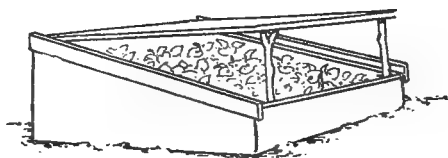
The right way
to pot a seedling
Cyclamen, the small
corm only slightly
covered with soil



The wrong way
to pot a seedling Cyclamen
the corm is covered too deeply



PERSIAN CYCLAMEN



In the Summer, the best place
for Persian Cyclamen is in a cold frame

Towards the end of July the old corms should be
turned out of the pots and repotted

especially while in the seedling stage, and dislike extremes of temperature, for their growth is easily checked.

When in early summer the flowers have faded and the leaves begin to turn yellow the supply of water must be diminished gradually, and when the leaves have fallen watering is discontinued altogether until July, when the roots are repotted, placed in a cool frame, and kept slightly moist. As growth progresses more water will, of course, be required. Some amateurs plant their *Cyclamen* roots out of doors during summer in some fairly cool place, and leave them there until early September, when they are lifted and repotted. Although this is unorthodox treatment, it seems to answer satisfactorily. There are various strains of *Cyclamen*, including the fringed and scented.

Exacum. The *Exacums* are attractive little plants, members of the *Gentian* family, and bear flowers of bluish violet colour. Those chiefly grown and to be recommended to the amateur are *Exacum affine*, a perennial, bearing bluish purple blooms in spring, and *Exacum macranthum*, an annual, with violet-coloured flowers in late summer. The latter is increased by seeds sown in a temperature of from 65 to 70 degrees in February, and the former in a similar way, or by cuttings taken of the young shoots in spring. They like loam with leaf-soil and peat and a little sand.

Francoa (Bridal Wreath). This plant is hardy in many southern counties, though generally treated as a greenhouse plant. It forms a tuft of large leaves, and in summer

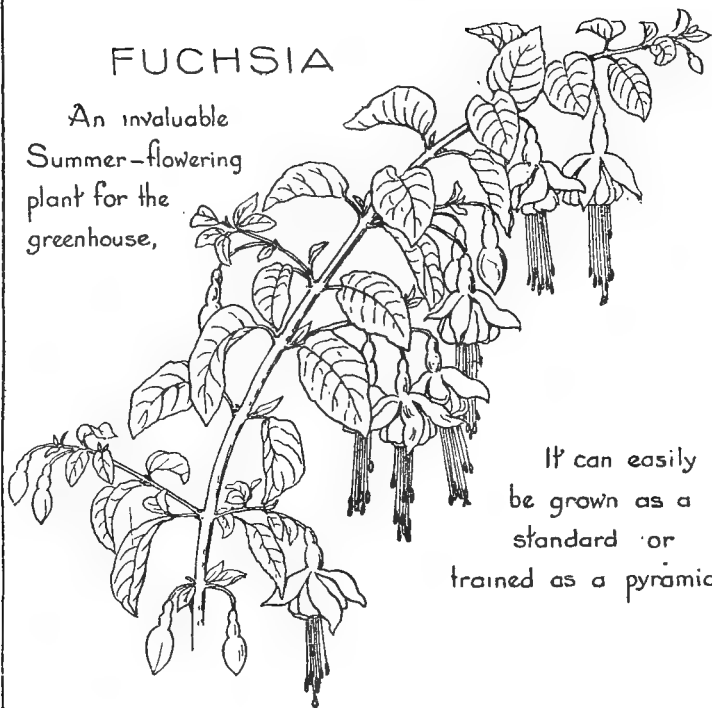
produces slender spikes wreathed in small blossoms. *Francoa ramosa*, with white flowers, is usually met with; in *sonchifolia* and *appendiculata* the flowers are rose purple. Seeds are sown in the greenhouse in April, and during summer the plants are grown in a frame and will bloom the following year. The final repotting, using turfy soil (loam), takes place in early spring into 6- or 7-inch pots. During winter a temperature of 45 degrees is high enough.

Gomphrena (Globe Amaranth). The varieties of *Gomphrena globosa* have rounded heads of variously coloured so-called everlasting flowers, which, besides being of value for the greenhouse, are useful also when dried for winter decoration. The plant is an annual, and is raised from seed sown in the greenhouse in March. The seedlings must be pricked out when large enough, and at the final repotting are put singly in 4½-inch pots. They are easily grown in an average temperature of 50 to 55 degrees, and loam with a little leaf-soil and sand forms a suitable compost. If the flower-heads are wanted for winter decoration they should be cut before they are quite open, and laid out to dry on the greenhouse shelf.

Grevillea (Australian Oak). This is an attractive plant grown for decorative purposes for the sake of its graceful, deeply divided leaves. It is easy, if somewhat slow, from seeds sown in the greenhouse in spring; they should be put in small pots of sandy soil, the pots being placed in a box of moist fibre and covered with glass. The seedlings must be potted singly, when an inch or so high, in a compost of loam, peat, and sand.

FUCHSIA

An invaluable
Summer-flowering
plant for the
greenhouse,



It can easily
be grown as a
standard or
trained as a pyramid

During the Winter the plants
are given very little water.

In Spring they start into growth
and cuttings are made from the
fresh shoots

Fuchsias may also be grown
as climbing plants and trained
beneath the greenhouse roof.



Humea elegans. This is a charming plant with fragrant leaves, and bearing graceful panicles of small reddish flowers in summer. It is too big for a small greenhouse, for the flower stems reach a height of 6 feet; but during summer the plants can be used in summer bedding. Seeds are sown in June or July in pots of soil in a frame, in which they are grown until autumn. Then if the frame is not heated they must be taken into the greenhouse, although a temperature of 45 degrees is quite high enough. The seedlings must be repotted as becomes necessary, being put into 5-inch pots in September and repotted in March into those 8 inches wide.

Petunia. The different varieties of Petunia are largely grown, both for the outdoor garden in summer and for the greenhouse. For the latter purpose the large double-flowered kinds are admired by many, though out of doors they are often disfigured by strong winds and heavy rains. The large double kinds are increased by means of cuttings which are obtained from old plants that have been kept over the winter. Then, with the return of spring, and under the influence of increased warmth and moisture, young shoots are freely pushed out. As soon as these are about a couple of inches long they should be taken as cuttings; the bottom leaves are removed and the cuttings dibbled into pots and placed in a close propagating case in the warmest part of the greenhouse. There they will quickly root, and directly this takes place they must be inured to the ordinary atmosphere of the greenhouse and then be potted singly. A suitable compost for Petunias may be made up of 3 parts

of loam to 1 part each of leaf-mould and well-decayed manure with a sprinkling of silver sand. As soon as the young plants are established in their small pots the growing point of each should be pinched out in order to encourage a bushy growth. Potted on as they require it, these plants will, in pots 5 or 6 inches in diameter, yield a wealth of blossom during the summer months.

The single-flowered kinds can be raised from seeds, of which remarkably good strains are now obtainable. The seed should be sown at the end of February or early in March, when, if placed at the warmest end of the greenhouse, it will quickly germinate. It is small, and is best sprinkled thinly over the surface of a pan filled with soil, consisting of loam, leaf-mould, and sand, and passed through a sieve with $\frac{1}{4}$ -inch mesh. Then it should be slightly covered with a little very fine soil. As soon as the plants are large enough to handle they must be pricked off into pans or boxes, and when sufficiently advanced potted singly into small pots. Their subsequent treatment is the same as that recommended for those raised from cuttings. In addition to their value when grown in pots, Petunias are well suited for hanging baskets.

Primula. The various kinds of Primula are perhaps the most valuable of all greenhouse flowers, and are strongly to be recommended to amateurs possessing a greenhouse in which the temperature does not fall below about 50 degrees in winter. It is quite true that even the Chinese Primulas will withstand a few degrees of frost and prove satisfactory in a cold greenhouse providing the winter is not too



OLEANDER

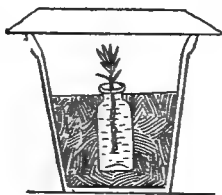
A favourite
plant for cultivation
in pots in the green-
house ;— it flowers in
Summer



It must be kept moist at
the roots.



In hot weather the plants
should be stood in saucers of
water.



Cuttings will form roots if set in bottles of water
suspended from the roof of the greenhouse or plunged
in fibre.

severe, but there they are not so fine as in a higher temperature.

The Chinese Primulas, which are the most popular sorts, are divided into two chief groups—the Stellata type, in which the flowers, in successive tiers or whorls on the stem, are produced throughout many weeks, and the ordinary type, in which the blossoms are in bunches. A variation of the latter is found in the giant Primulas, which have large, handsome blooms, though the plants are less tractable and need uniform conditions of warmth and moisture to prove successful. The Stellata or Star Primulas are best for amateurs, for they are easily grown, of graceful growth, and flower for a longer period than the others. In addition to the innumerable varieties of Chinese Primula (*Primula sinensis*), there are others especially worthy of attention.

Some Beautiful Sorts. One of the finest is *Primula kewensis*, which bears deep yellow blossoms for weeks together in winter and spring. *Primula floribunda* is somewhat similar though with smaller and less showy yellow blooms. The Abyssinian Primrose (*Primula verticillata*) is a particularly charming sort with grey leaves and bearing whorls of pale yellow blossoms on tall stems in spring. *Primula obconica*, modern strains of which yield large flowers varying in colour from white to crimson, is also indispensable. Some people are unable to handle this kind, owing to the fact that the hairs on the leaves and leaf-stalks produce a severe irritation of the skin; the latest varieties, however, are distinguished by greater smoothness of leaf, and the danger consequently is not so great. An extremely dainty Prim-

rose is called *Primula malacoides*; this produces a profusion of small lilac or mauve blossoms on slender stems, and makes a most delightful show. It is nearly, if not quite, hardy, though appreciating a warm greenhouse in winter. This *Primula* will blossom in about six months from sowing the seed, so that by successive sowings it is an easy matter to have plants in blossom all the year round.

When to Sow Seeds. Seed of all those named may be sown in March, April, May, and early June, and the seedlings will then come into bloom during autumn, winter, and spring, with the exception of *Primula verticillata*, which will not flower until spring. In a greenhouse with a night temperature of about 50 degrees the seeds, sown on sandy soil and only slightly covered, will germinate within a few weeks, providing the pots are covered with glass and shaded and the soil is kept moist. When the seedlings are large enough to handle conveniently they are transplanted either singly to small pots or about 2 inches apart in other flower pots or pans; the former method is preferable for amateurs. The soil needed is half loam and half leaf-soil with silver sand mixed in. As soon as the warm weather sets in—say in May—the Primulas should be placed in a cool frame containing a bed of ashes, there to remain throughout the summer. When nicely rooted in the small pots the plants are repotted into those 5 or 6 inches in diameter in which they will bloom. The soil for this, the final repotting, ought to consist of loam two-thirds, leaf-soil one-third, with a fair sprinkling of silver sand.

During summer Primulas must have cool, moist conditions, and a



No part of a garden is more delightful in spring than that which is planted with flowering shrubs and bulbs. Here we see a charming association of rock, water, trees, shrubs, and bulbs.

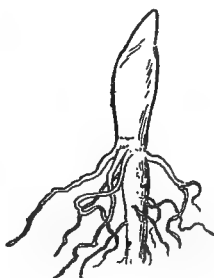


In selecting Dahlias for garden decoration, a choice should be made from those varieties which bear stiff-stemmed flowers, as, for example, Brentwood Yellow, which is shown in this illustration.

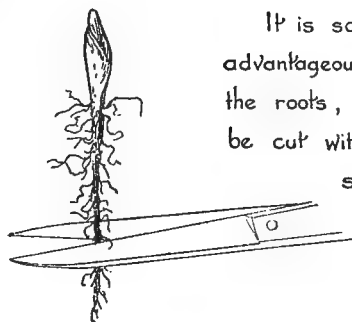
LILY OF THE VALLEY



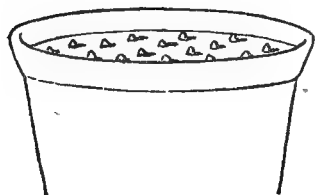
Flowering Crown



It is sometimes advantageous to shorten the roots, they should be cut with a pair of sharp scissors



Crowns should be planted closely and the pots



plunged into fibre and covered with damp moss

frame in a partially shaded spot is ideal for them. The frame ought to be made about half full with sifted ashes; thus the plants are brought fairly near the glass, and the pots are on a moist base. It is a good plan to sink the pots partially in the ashes. Needless to say, the soil must be kept properly moist, and this can only be done by watering when it begins to get dry and before it has got quite dry. Syringing morning and evening is beneficial, and some shade from hot sunshine is desirable. By September the *Primulas* ought to be well rooted in the 5 or 6-inch pots, and must then be transferred to the greenhouse, where during the next few months they will provide a brilliant show of bloom.

***Rivina humilis*.** An easily grown plant of slender growth. The flowers, which are borne in drooping racemes, are insignificant; but they are succeeded by berries which turn bright red in autumn when ripe. In their pendulous clusters and showy colour the fruits of this *Rivina* are rather suggestive of Red Currants, but are somewhat smaller. Given a warm greenhouse, cuttings strike root very readily in a close case in spring, while seedlings are also easily raised. In either case the young plants should be stopped two or three times during their early stages in order to ensure a bushy habit of growth. The *Rivina* needs a fairly light soil—say, equal parts of loam and leaf-mould with a little sand. The plants do well in the greenhouse during the summer, and the light, buoyant atmosphere there maintained is very favourable to the pollination of the flowers and consequent production of berries. Effective plants can be grown in pots 5 to 6 inches in diameter.

***Schizanthus* (Butterfly Flower).**

This is a very dainty greenhouse flower represented by many shades of colour ranging from white through rose to crimson and through lavender to purple. The finest plants are obtained by sowing seeds in September; they will then be first-rate specimens by May, when they come into blossom. For later summer bloom sowing is carried out in spring. The seeds are sown thinly, and the seedlings are transferred singly to small pots, and subsequently to those about 4 inches wide, in which they pass the winter if sown in September. In February they are repotted finally into pots 6 or 7 inches wide. It is necessary to pinch out the points of the shoots when the plants are 2 or 3 inches high, so that they may be induced to branch freely. Plants from seed sown in spring are not likely to need such large pots. *Schizanthus* are fairly hardy, and in winter a minimum temperature of 45 to 50 degrees is suitable. Those usually grown are varieties of *Schizanthus retusus* and *pinnatus*, and, as already stated, the range of colouring is remarkable.

***Streptocarpus* (Cape Primrose).**

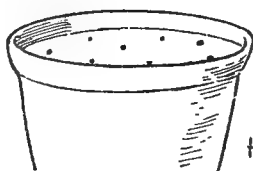
This attractive greenhouse plant has advanced in popular favour very considerably during the past few years owing chiefly to the improvements which have been brought about in both the size of the flowers and the variety of their colouring. The blossoms, which may be rose, crimson, purple, or white marked with different colours, appear in loose bunches in summer on stems some 8 or 10 inches high that arise from the long and handsome leaves. Propagation is effected both by seeds and by division of the roots. From a sowing made in the early



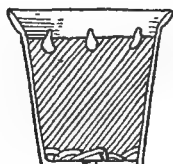
FREESIA

A fragrant greenhouse plant of many colours for Winter and Spring flowering, should be potted in July and August.

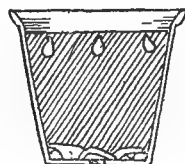
Wrong potting
bulbs not covered



Correct way the
tips of the bulbs
just below the soil



A 5-inch pot will
accommodate 8 bulbs



months of the year flowers may be expected in August, but the results are more satisfactory the following summer after the plants have rested during winter. The seed should be sown in a well-drained pot filled with sandy soil and placed in a warm greenhouse to hasten germination. When large enough to handle, prick out the seedlings 2 inches apart in a box, and keep them shaded until established. Early in autumn, if all has gone well with them, they will be ready for small pots, and in these they will pass the winter. Use a compost consisting of equal parts loam and leaf-mould, with a liberal addition of coarse sand.

The best place for them is on a shelf close to the roof glass in a temperature of about 60 degrees. Very little water will be required during winter. In March the most forward plants may be potted into 5-inch pots for flowering. For this potting a more substantial soil is necessary, and a little well-rotted manure with a sprinkling of some approved fertiliser may with advantage be added. Although the plants succeed well in an ordinary greenhouse, they do better if grown in a moist intermediate temperature until May or June, by which time they have attained a good size and will then go on flowering throughout summer. To keep up the supply of bloom all seed-pods must be removed, and when the pots are full of roots feeding is necessary.

Torenia. The best *Torenia*s for greenhouse decoration are the

annuals *Torenia Baillonii* and *T. Fournierii*. Both attain a height of about 12 inches, and if grown in pots are very attractive in the greenhouse during the summer months. In *Torenia Baillonii*, which, by the way, is also known as *flava*, the flowers are yellow with a purple blotch ; while in *Fournierii* they are mainly violet with white, yellow, and lilac markings. A variety of this, known as *White Wings*, has flowers almost wholly white. The seeds are very small, and should be sown in a mixture of sifted loam, leaf-mould, and sand. A little dry sand may be sprinkled over the seed, and the pan then stood at the warmest end of the greenhouse. It is most essential that the young plants be kept shaded. When sufficiently advanced, they must be pricked off into pans or boxes, and subsequently be put into their flowering pots. Those 5 inches in diameter are suitable ; they should be filled with the same kind of soil as that already recommended, except that it need not be sifted. Six plants will furnish a pot of the size named, and yield a wealth of blossom throughout summer. The old flowers must be cut off regularly, and the plants given an occasional stimulant when the pots are furnished with roots. To form neat little specimens the shoots may be supported by placing four short sticks around the edge of the pot and tying a fine strand of raffia from one to the other. They are sometimes put in hanging baskets, in which condition they flower well and are seen to advantage.

CHAPTER 46

Orchids for Amateurs

COMPARATIVELY few amateurs attempt to grow

Orchids, chiefly owing to the prevailing impression that they are costly and difficult. This is partly true. Some kinds or varieties are very expensive, and require skilful attention; others, however, are free from both these drawbacks. Plants of certain kinds may be purchased for a few shillings each, and their needs are such as can be supplied by an ordinary greenhouse. The prospective grower has first to make up his mind whether he will try those needing a warm greenhouse or others requiring quite cool treatment, and he should, if possible, devote to them the whole space, or a definite portion of the greenhouse, separately enclosed by a glass partition. It is true that some may be grown with fair success among other plants, but the amateur who intends to make a hobby of Orchids will probably wish to grow them as well as he is able, and for that reason will give them individual attention. This they cannot have if they are among a general collection of greenhouse plants.

Greenhouses that are Suitable. A span-roofed or lean-to greenhouse in a sunny position is, if heated, suitable for certain kinds of Cattleya, Oncidium, Dendrobium, Lycaste, Cypripedium, Cœlogyne,

and Laelia, which are chiefly to be recommended to the unskilled amateur. The winter night temperature ought not to fall below 55 degrees, except in very severe weather, when a minimum of 50 degrees would do no harm, but 55 degrees is the temperature at which to aim. A greenhouse suitable for Orchids that need a cool atmosphere is a lean-to that faces north or east, although a span-roofed one in an open position will do, for coolness can be provided by shading, free ventilation, and moisture. The minimum winter night temperature in this case is 45 degrees, and in exceptionally cold weather it may fall two or three degrees lower. In a house of this kind such beautiful Orchids may be grown as *Odontoglossum*, *Cœlogyne*, *Disa*, *Sophranitis*, *Ada aurantiaca*, *Cypripedium*, *Odontoda*, *Oncidium*, and *Zygopetalum*.

Ventilating and Shading. A few remarks on the general treatment needed by the Orchids named will probably suffice to set the amateur in the right way, and he will learn much by experience. Ventilation and shading are matters of importance. The object should be to endeavour to maintain a regular temperature—one that does not fluctuate widely. The temperature during the day ought to be about 8 or 10 degrees higher than during

the night, and only attention to ventilation and shading can ensure this. It is a great mistake to allow the temperature to rise to the maximum and then by means of opening the ventilators widely and by pulling down the blinds to cause it to fall. Rather must it be prevented from rising too high by shading in good time and by opening the ventilators slightly when the thermometer registers 5 or 6 degrees above the minimum, increasing the amount of air admitted if the weather should become hotter. The orthodox practice is to reduce the ventilation early in the afternoon, pull up the blinds when the sun no longer shines directly on the roof, and then to close the ventilators. This has the effect of "bottling up" some natural warmth, with the result that less artificial heat is necessary at night. The temperature will probably rise quickly after the house is closed on a sunny day, but this will do no harm. These remarks apply especially to the heated greenhouse during summer.

In unfavourable weather in autumn, winter, and spring no ventilation is required, though on mild days it is wise to open the ventilators slightly, yet not to such an extent as to lower the temperature.

In attending during summer to the greenhouse containing *Odontoglossums* and others needing similar treatment, the chief object must be to keep it as cool as possible, and this can only be done by leaving the ventilators open all night—whether fully open or only partially open will depend upon the out-of-doors temperature. Shading, too, must be provided in bright weather from early morning until fairly late in the afternoon. There must be no closing of the house as with the

heated one. In winter air is admitted when the weather is not severe; in fact, the day temperature at that season ought not to be higher than 50 degrees or so.

Both warm-house and cool-house Orchids need a moist atmosphere during summer; indeed, so essential is moisture to their welfare in hot weather that specially built Orchid houses are provided with tanks. If, on reading the directions, the amateur who is obliged to be away from home during the greater part of the day feels dismayed at the close attention that is apparently necessary, let him take heart and approximate to them as nearly as he can. Even Orchids are more or less accommodating, and do not fail so readily as one might imagine.

Potting is a somewhat special process, and the ingredients are different from those used for ordinary plants. In the first place, drainage must be perfect, so the pots are at least half filled with crocks; the compost for most of those named may consist of peat and chopped sphagnum moss together with small pieces of charcoal. The proper kind of peat to obtain is known as Orchid peat; it contains very little loose material (which is useless for Orchids). Only firm peat is used. This is broken into pieces about the size of walnuts and is well mixed with the chopped sphagnum moss. It is sometimes necessary to insert a small stick among the crocks, and to attach the leaves or stems to the upper part for the purpose of keeping the plant steady until it has made fresh roots. The compost must be worked in among the roots carefully by hand and pressed down firmly; the surface of the compost is not finished off below the level

of the pot as in ordinary potting, but is raised above it in the form of a slight mound, higher in the centre than at the sides.

During summer most Orchids are in full growth, and need a moist atmosphere ; the compost must be kept moist also. In winter less moisture, both at the root and in the atmosphere, is needed. The time to repot Orchids is when they are beginning to make fresh growth, which is usually immediately after flowering. When potting *Cypripedium* the compost may consist of one half loam and one half peat and sphagnum moss, and in this case it is not necessary to raise the surface above the rim of the pot. Following are brief notes on a few of the most suitable Orchids for the warm house :

Calanthe. The two kinds recommended are *Calanthe vestita*, white with rose centre, and *Calanthe Veitchii*, rose colour. They bloom in winter, are repotted in spring in a compost of loam, peat, and sphagnum moss, and kept warm and moist during summer. The leaves fall off in autumn, and subsequently the flower-spikes appear. Very little water at the root is given after the leaves fall, and from the time the flowers have faded until growth begins no water at all is required.

Cattleya. Some beautiful sorts are *Bowringiana*, *Skinneri*, *labiata*, *Schröderæ*, *Mossiæ*, *Mendelii*, in all of which mauve colouring predominates ; *citrina*, which has yellow blooms, is of pendent growth, and needs to be grown in a basket or suspended pot. They bloom at various times of the year, consequently repotting is carried out at different seasons. Warmth, shade, and moisture during growth, and

cooler and drier conditions when growth is quiescent, are required.

Cymbidium lowianum is a vigorous Orchid that bears, in winter, spikes of greenish yellow blooms marked with red. It is not difficult to grow if treated similarly to *Cattleya*, except that the compost may contain loam in addition to peat and sphagnum moss.

Cypripedium. Some kinds of *Cypripedium*, or Lady's Slipper Orchid, thrive in the cool house ; others need more warmth. Among the latter are *insigne* *Sanderæ*, *Spicerianum*, *villosum*, and innumerable hybrid or cross-bred kinds. They bloom in winter, and start growing in spring. Cool and somewhat dry conditions of atmosphere in autumn and winter, with warmth and moisture in spring, meet their needs. The compost (which may contain loam) must be kept only slightly moist in winter.

Dendrobium. There are some remarkably handsome flowers among the *Dendrobiums*, many of them being richly coloured. The amateur should choose *nobile*, *crassinode*, *fimbriatum*, and *Wardianum*, which bloom in spring. They must have plenty of warmth and moisture in spring and summer when making growth ; but in autumn, after the leaves have fallen, and in winter the compost needs little water, and a temperature of 50 degrees is high enough.

Lycaste Skinneri is an old and favourite Orchid with large rose and white flowers that open in winter ; it needs similar conditions to those outlined for *Cypripedium*.

Oncidium. As with *Cypripedium*, there are *Oncidiums* suitable for the warm and for the cool house. Among the former class are several showy sorts ; for instance,

the Butterfly Orchid (*Oncidium papilio*), *Kramerianum*, and *Marshallianum*. They bloom in summer, need warm, moist conditions while in full growth, and must be kept drier at the root in winter.

Chief among the Orchids for the cool house are the numerous kinds of

Odontoglossum. The principal favourites are those with white or pale flowers marked with red or brown dots or blotches, such as the varieties of *Odontoglossum crispum*; but there are innumerable others of various colouring, of which the following are recom-

mended: *harryanum*, *Edwardi*, *grande*, and *cirrhosum*. Keep them thoroughly cool and moist during summer, providing shade and dispensing with fire heat, and maintain drier conditions in winter, though even at that season the compost must be kept moderately moist. Other Orchids needing similar treatment are *Oncidium concolor* and *varicosum* (both yellow); *Sophranitis grandiflora*, a dainty little plant with scarlet blooms; *Ada aurantiaca*, orange coloured; *Disa grandiflora*, scarlet; *Odontioda*, popularly known as red *Odontoglossum*, and *Cypripedium insigne*.

CHAPTER 47

Hard-Wooded Plants

THE Indian Azalea, well-blossomed specimens of which are such a feature of florists' shops in spring, is a typical hard-wooded plant. Others are the Bottle Brush Tree (*Metrosideros floribunda*), *Boronia*, *Erica* and *Epacris*, *Rhododendron* and *Chorizema*. Though amateurs generally do not grow them, they are a speciality in some gardens; thus it may be of interest to devote a short chapter to their cultivation. If they are not particularly easy to manage successfully, compensating advantages are that they are long-lived and blossom season after season for many years. The chief matters claiming attention are the following: the compost must consist of half peat and half turf loam, with sand very freely intermixed; potting must be firm, drainage perfect, and watering carefully carried out. A minimum temperature of 45 degrees in winter suits them. The hard-wooded greenhouse plants mentioned here bloom in spring and all need very similar treatment.

When the flowers have faded it is usual to trim the plants into shape; the shoots are shortened to such an extent as seems necessary to ensure symmetrical plants. Fresh shoots will then form, and for some six weeks at that period a warm and moist atmosphere is necessary to

encourage quick growth. In June the plants may be placed out of doors in a sunny position so that the shoots may become firm and well ripened, for upon this depends the quality of the flower display the following spring. In late September the plants are removed to the greenhouse, where the cooler they are kept the better are they likely to thrive, provided a temperature of 40 to 45 degrees is regarded as a minimum. As has been mentioned, peat must be freely used in the potting compost, and consequently watering needs great care, for it is not easy, from a casual glance, to tell whether peat soil needs water or not.

It is most essential to keep the compost moist, though it is just as important that it should not be sodden, for hard-wooded plants are susceptible to extremes of this kind, and soon become sickly under haphazard treatment. The rule is not to give water until the compost is slightly dry, then to fill the pot to the rim, and to give no more water until the soil is again in a similar condition. During summer, while the plants are out of doors, the soil in the pots dries rapidly, especially if the latter are not plunged to the rim in ashes, as they ought really to be. The following are the hard-wooded plants recommended to the amateur, and in each case a few

details of the required treatment are appended.

Acacia. Some of the *Acacias* are most attractive in the form of small specimens, such, for example, as *armata*, *Drummondii*, *hastulata*, *Riceana*, and others. Raising them from cuttings is rather slow and none too easy, so amateurs are advised to purchase small plants. They should be trimmed into shape after flowering, and be kept in the greenhouse for four or five weeks to induce free growth. From June to late September they ought to be placed out of doors in a sunny position.

Azalea. Many people buy plants of Indian *Azalea* in full bloom in early spring, and find that the following and succeeding years they scarcely flower at all. Having shortened any straggling or weak shoots, one should put the plants in a warm and moist greenhouse if available if not, in the warmest window of the house. If repotting is considered necessary, it should be carried out when the shoots are $\frac{1}{2}$ inch or so long. From June onwards put them out of doors in the sunniest place. *Deutsche Perle* is a fine white, *Apollo* is scarlet, and *Professor Walters* rose.

Boronia. Two or three kinds of *Boronia* are grown in gardens, of which the most showy is *Boronia heterophylla*; this bears a profusion of small, bell-shaped flowers of attractive, purplish colouring. In *Boronia megastigma* the blossoms are less attractive, brownish yellow; but they are fragrant. Another kind is *Boronia elatior*, with rose red blooms. After flowering, the shoots may be shortened by about

half, and should then receive similar treatment to that outlined for *Azalea*.

Chorizema. This is a hard-wooded plant of loose and somewhat untidy growth, which bears pea-shaped flowers. In *Chorizema cordata* they are red and yellow, and in *Chandleri* orange and red. These plants are not difficult to grow, and when in bloom are very attractive. They need the same sort of treatment as already described.

Epacris. This is a close ally of *Heather*, and in early spring bears a profusion of small tube-shaped flowers, which are white, rose, or red, according to variety. When the flower display is over the shoots may be shortened by about half; if kept moderately warm and moist, fresh growth will soon form, and will ripen properly if the plants are put out of doors from June to September.

Erica (Heath). Among the *Heaths* grown for spring blossom in the greenhouse there are several charming sorts, notably *hyemalis*, white and rose; *candidissima*, white; *cavendishiana*, yellow; *willmoreana*, rose pink. The shoots must be cut back after flowering, and the general treatment be as advised for the other hard-wooded plants.

Metrosideros (Bottle Brush Tree). The curious shape of the spikes of red flowers has given rise to the popular name, and the reader will have no difficulty in forming an impression of its appearance. Some pruning is necessary in the way of shortening straggling shoots after the flowers have faded.

Greenhouse Climbing Plants

A GREENHOUSE looks its best only when the pillars and rafters are covered with climbers, for they add greatly to the charm of the display. In quite a small greenhouse one must plant them very sparingly, otherwise the roof becomes covered with foliage and the plants in pots beneath are liable to suffer. However, most of them are deciduous (leaf-losing), and, providing the shoots are kept thinly disposed in summer, the shade of one or two climbers may be beneficial rather than disadvantageous. They usually thrive better when planted out in a small, well-drained border of loamy soil with which a little leaf-soil and sand are mixed, than when grown in pots, although very large flower pots or tubs will do. In the following notes the chief kinds are referred to, and brief particulars of cultivation are given.

Abutilon. The pendent, bell-shaped flowers of *Abutilon* look very charming in spring and summer among the large leaves on greenhouse roof or rafter. When the plants are established and possess several branches it becomes necessary to prune rather hard in February. *Canary Bird* is a handsome yellow variety, *Boule de Neige* is white, and *Sanglant* is reddish. A minimum winter temperature of from 45 to 50 degrees is

necessary. Little water need be given in winter.

Begonia. Several of the vigorous *Begonias* make good greenhouse climbers, notably *President Carnot*, *fuchsioides*, and *metallica*, the last named being esteemed for its ornamental foliage. These may be grown in large flower pots in loam and leaf-mould. No special pruning is required, but the older shoots must be thinned out occasionally.

Bougainvillea. This is a vigorous, shrubby, leaf-losing climber that bears purplish mauve flowers (really bracts) in profusion in summer. It is suitable for covering a greenhouse wall or for training on the roof. A well-drained bed of loamy soil must be prepared. Prune hard in early spring.

Cestrum elegans, bearing bunches of rosy, tube-shaped flowers in early summer, is an excellent climber for pillars. It should be pruned fairly hard after the flowers are over.

Fuchsia. This favourite plant grows quickly, and may be readily trained as a climber, in which form it is especially attractive. Hard pruning in spring is necessary. There are numerous varieties, both single and double, to choose from.

Gloriosa superba. A tuberous-rooted plant which produces slender shoots of annual duration only, and in summer brilliant red and

yellow blossoms. No pruning is required. The soil must be kept dry in winter after the stems have died down. This is really a hot-house climber, but will thrive in an ordinary greenhouse if the winter temperature does not fall below 50 degrees. *Gloriosa* may be grown in a large flower pot or tub.

Heliotrope. The old-world Cherry Pie makes a useful greenhouse climber for the back wall or pillar, and if the winter temperature is not lower than 50 degrees or so it is nearly always in bloom. It should be pruned moderately in spring.

Hibbertia dentata. This evergreen twining plant is rarely seen in the amateur's greenhouse, yet its bronze green leaves, and in summer its bright yellow blossom, ought to make many friends. The shoots are apt to become crowded, and pruning takes the form of thinning out the older ones occasionally.

Hoya carnosa (Wax Flower). This, which is commonly known as the Wax Flower, makes slender stems bearing thick evergreen leaves, and produces wax-like pinkish flowers in bunches. Little pruning is needed except to cut out an old shoot occasionally. The minimum winter temperature ought not to fall below 50 to 55 degrees. It thrives best in loam and peat with sand intermixed.

Lantana salviaefolia, with attractive foliage and mauve pink blooms in summer, makes an excellent climber and is quite easily grown. The shoots must be thinned out occasionally and cut back moderately in spring.

Lapageria rosea produces slender stems, from which the lovely drooping bell-shaped blossoms are produced throughout a long season

from early spring onwards. This climber thrives best in a greenhouse facing north, and needs no artificial warmth except in very cold weather. It should be grown in large, well-drained pots, in a compost of loam and peat with which broken bricks and sand are mixed. Careful watering is essential, little moisture at the root being needed in winter.

Lonicera sempervirens minor is a handsome Honeysuckle for the greenhouse that bears red and yellow flowers in summer. It should be pruned in early spring.

Passiflora (Passion Flower). Perhaps the most beautiful of all the Passion Flowers are the blue *Passiflora cærulea* and its white variety, *Constance Elliott*; although hardy in many gardens, they are well worth growing in the greenhouse. The flowering shoots should be allowed to hang down from the roof to be seen at their best. These plants grow quickly, and it is usually necessary to thin out some of the older shoots in autumn.

Plumbago capensis is an easily grown climber, bearing bunches of exquisite pale blue blossoms in early summer. It should be pruned moderately hard in spring.

Rose. Some Climbing Roses are unsurpassed as climbers for the greenhouse rafters and roof, and if planted in a well-drained border of turfy soil with which some bone-meal and yard manure are mixed they are certain to thrive. For the first two or three years pruning is not usually necessary, except that in spring all side shoots should be cut back to within two buds of the base. Later on the aim must be to cut out old branches to make way for young ones.

CHAPTER 49

Bulbs for the Greenhouse

THE amateur who would have his greenhouse gay in spring must invest in a suitable selection of bulbs, for they are easy to grow and yield a maximum display in return for a minimum of labour. Even during summer he will find that certain bulbs are invaluable, though it is chiefly in spring that they must be relied upon. One may conveniently classify bulbs for the greenhouse in two divisions: those that are hardy and others that are tender. Needless to say, the former give less trouble and are especially to be recommended to the gardener whose spare time is limited.

Hardy Bulbs. There are many of these from which to choose, such, for example, as *Crocus*, *Chionodoxa* (Glory of the Snow), *Scilla* (Squill), *Snowdrop*, *Muscari* (Grape Hyacinth), *Hyacinth*, *Narcissus*, *Tulip*, *Leucojum* (Snowflake), *Allium* (ornamental Onion), *Ornithogalum nutans* (Star of Bethlehem), *Fritillaria* (Fritillary), *Erythronium* (Dog's-tooth Violet), *Eranthis* (Winter Aconite), and *Triteleia* (Spring Star Flower). All require similar treatment, and may therefore be grouped together so far as their cultivation is concerned. All the early-flowering sorts, such as *Crocus*, *Snowdrop*, *Squill*, and *Winter Aconite*, should be obtained

in August or early September, and the remaining kinds in October. It is a great advantage to pot them in good time, so that they may be well rooted before top growth begins. In fact, all spring-flowering bulbs for the greenhouse ought to be potted by the middle of October except May-flowering Tulips, which may be left until early November. For the smaller kinds 5-inch pots are suitable, and the bulbs are placed about $1\frac{1}{2}$ inches apart. For the larger bulbs 6-inch or even 7-inch pots are best, and four, five, or six bulbs, according to their size, may be put in each.

Advice on Potting. It is advisable to place the small bulbs at such a depth that their tops are covered by about $\frac{1}{2}$ inch of soil; it is not possible to treat the large bulbs in this way, but care should be taken to bury them to the depth of one-half or two-thirds. Clean pots are, of course, advisable, and a few crocks should be put in the bottom. Suitable compost consists of turfy loam (fibrous material is far better than loose soil) two-thirds and leaf-soil one-third, together with a free admixture of sand. Practically all bulbs like sandy soil, and sand must be regarded as an essential ingredient of the potting compost. It is not wise to make the soil too firm beneath

the bulbs, or when rooting begins they are pushed up out of the compost. Nevertheless, it must be pressed down moderately firmly.

When potting is completed the bulbs should be watered. The usual practice is then to place the pots on some level piece of ground having a firm base, and to cover them with ashes for the purpose of ensuring cool and moist conditions, which are essential to the formation of roots. The bulbs are left undisturbed for six or eight weeks; at the end of that period they are examined, and such as have made plenty of roots and slight top growth are ready for removal. It is a mistake to take them direct from the ashes to a sunny greenhouse; this practice accounts for the brown-tipped leaves so frequently seen on full-grown plants. The bulbs ought to be shaded for several days after removal, and may then be exposed to full light without harm.

Those who have not the necessary space available to practise the method described may put the pots of bulbs in a shady airy frame, in a shallow trench dug in the garden border, at the foot of a fence or wall facing north, or even in the coolest and darkest corner of the greenhouse. However, the orthodox plan is in this case the best. During winter comparatively little water will be needed, though the soil must be kept moderately moist. In spring, as the flower-spikes show, the soil dries quickly, and watering must be frequent; probably it will be necessary twice daily in bright weather.

Among choice roots or bulbs not already referred to one may mention bulbous Irises, hardy Cycla-

men, *Lilium* (Lily), and *Anemone*. Lily bulbs are obtainable at various times throughout autumn and spring, and should be potted as soon as they are received. In dealing with these it is best to about half fill the pot with soil; place on the bulb and cover it to half its depth, give very little water until growth starts, and keep in a frame or greenhouse safe from frost. In spring the remaining space in the flower pot is filled with soil. The beautiful early bulbous Irises (such as *Histrio*, *Krelagei*, and *reticulata*), *Fritillaries*, *Anemones*, and *Erythronium* (Dog's-tooth Violet) ought to be potted in September and kept in a frame until growth starts. The chief spring-flowering hardy Cyclamens are *Coum*, *ibericum*, *Atkinsii*, and *repandum*. The roots are potted in August and placed in a frame.

It must not be forgotten that all the bulbs so far named are hardy and need perfectly cool treatment; any attempt to force them into bloom too early by excessive warmth will result in failure. All thrive in the cold greenhouse, though they do equally well in one that is slightly heated.

Two of the most popular early bulbs for the greenhouse are Roman Hyacinths and Paper White Narcissi; they are potted in August and kept under ashes for six weeks or until well rooted. When the flower-spikes show they may be forced into bloom quickly if necessary. Italian Hyacinths (which are similar to, though rather more vigorous than, Roman Hyacinths, and are obtainable in white, pink, and pale blue) and Duc Van Thol Tulips (to be obtained in red, white, and yellow) are also early

flowering, and should be potted in August. All these may be in bloom early in the new year, the Roman Hyacinths even by Christmas.

Tender Bulbs. Chief among the tender bulbs or roots available for the greenhouse are Freesia, Lachenalia, Nerine, Amaryllis, Cyclamen, Achimenes, Gloxinia, Tuberous Begonia, Ixia, Sparaxis, Arum Lily, Gesnera, Vallota, and Tuberose. The requirements of these

The roots are shaken out and repotted in spring.

Amaryllis. The Amaryllis, or Hippeastrum, bears large, showy flowers, similar in shape to those of a Lily, in spring. After the blooms are over the plants need close attention, for it is then that growth is completed. Keep them warm and moist in a temperature of 55 to 60 degrees. When growth is finished place them in a sunny

The Snake's-head Fritillary, *Fritillaria Meleagris*, is a charming hardy bulb for cultivation in pots in a greenhouse. It bears purplish crimson flowers in spring.



kinds are widely different, so that it is necessary to refer to them separately.

Achimenes. The small thin roots are potted in February or March, in a mixture of loam, leaf-mould, and sand, several roots being placed in a small pot and covered with soil. If kept moist and in a temperature of 50 to 55 degrees they will soon start growth, and when nicely rooted are repotted intact in 5-inch pots. The slender stems must be supported by thin sticks. As the leaves fade less water is given, and during winter they are kept dry.

frame, and as the leaves turn yellow give less water, and when the leaves have fallen keep quite dry at the roots. During winter they should be kept in the greenhouse, having a temperature of about 50 degrees. In late February or early March watering may begin, and growth will soon start. It is not necessary to repot more than once in two or three years; the best time to do this is as soon as the flowers have faded. Place one bulb in a 6-inch pot, using a compost of loam with which a little leaf-soil and decayed manure are mixed.

Begonia. The Tuberous-rooted Begonia, in its many brilliant varieties, is quite an easy plant to grow. In March the roots or tubers are placed in a shallow box filled with leaf-soil in a warm greenhouse (temperature 50 to 55 degrees), and when they have made roots and a few leaves they are potted separately in small pots and subsequently into those 6 or even 7 inches wide. A suitable compost consists of half loam and half leaf-soil, with sand intermixed. The young plants must have shade and moisture, and later on an abundance of air. Tuberous Begonias will flower in July and August from seed sown in a warm greenhouse in January.

Convallaria majalis (Lily of the Valley). Those who wish to grow Lily of the Valley in pots may dig up roots from the garden in autumn, or purchase them in winter. Either ordinary or retarded roots (they are called "crowns") may be obtained. The latter are more expensive, but they come into bloom very much more quickly than the others when placed in warmth. In dealing with retarded crowns it is necessary merely to put them closely together in pots, using a little soil round them to make them firm, and keep them moist and warm. Ordinary crowns are placed in pots of sandy soil, about 1 inch apart, at such a depth that the tops just show above the soil. They may then be grown along with other greenhouse plants in a temperature of about 50 degrees, or they may be forced quickly into bloom if plunged in fibre in a propagating frame. If kept dark until the leaves and flower-spikes are partly developed, light then being

admitted gradually, the leaves will be of an attractive light green colour, and the flower-spikes will be long.

Cyclamen persicum. The Persian Cyclamen is an invaluable flower for the greenhouse in spring. As its cultivation from seed is rather slow, amateurs may prefer to purchase plants in early summer for the following winter's bloom. Full directions are given in the chapter on "Greenhouse Flowers to Grow from Seeds."

Freesia refracta. The bulbs of this fragrant winter and spring flower are potted in July and August; a 5-inch pot will accommodate eight or ten bulbs, which should be placed at such a depth that they are just covered. Use loam with a little leaf-soil and sand. Keep the pots of bulbs in a frame for six or eight weeks, giving little water, then bring into the greenhouse. A temperature of 50 degrees is suitable. As the leaves fade give less water, and when the leaves have fallen keep the soil dry and place the pots on a sunny shelf. The bulbs should be taken out and repotted in July or August.

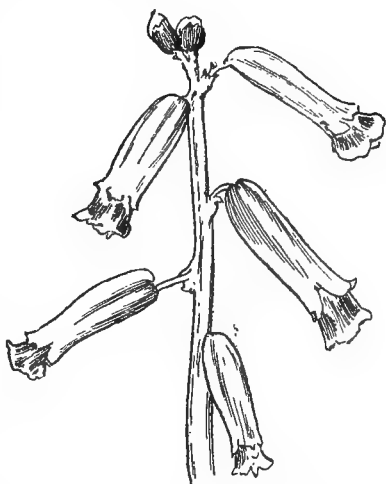
Gloxinia. The brilliant flowers of the Gloxinia are known to everyone, yet few amateurs attempt the cultivation of this plant because they believe a properly heated greenhouse to be essential to success. Such, however, is not the case. One may start the bulbs into growth in March, when little, if any, artificial warmth is required, placing them in a box of leaf-soil. If kept moist they soon start growing, and are then repotted singly in small pots in a compost of loam and leaf-soil with sand. They must be placed in larger pots later on,

and need shade and moisture throughout summer. During warm weather air may be admitted fairly freely.

Ixia. The small cup-shaped flowers of Ixia may be had in many remarkable shades of colour, though none is more striking than the green. The plants bloom in early summer, the bulbs being potted in September and kept in a frame or greenhouse safe from frost during winter. Little water is needed until top growth shows.

Lachenalia (the Cape Cowslip) is a favourite spring-flowering greenhouse plant, its red and yellow narrow, tube-shaped blooms making a brave show. It needs similar treatment to that advised for Freesia. The bulbs are, however, as well suited for planting in baskets as in pots, and the work is quite simple, providing the baskets are first lined with moss to prevent the soil falling out.

Nerine. This is one of the finest of all autumn flowers for the greenhouse, and it is astonishing to find



The Lachenalia, or Cape Cowslip, which blooms in early spring in a greenhouse.

how little it is grown by amateurs. The flowers open in September and October, and growth takes place during winter. At this period, therefore, they need careful treatment, and must be watered as is



The Nerine, an autumn-flowering bulb for the greenhouse.



The Freesia bears fragrant flowers in the winter months.

necessary, and be placed in a light position, as, for example, on a shelf not far from the glass roof. A temperature of 45 to 50 degrees is suitable. In spring the leaves fade and less water is given. During summer, while dormant, they are kept dry at the root and in a frame fully exposed to the sun. In late summer the flower-stems will put in an appearance, and watering must be resumed, though gradually. Repotting is only necessary once in three or four years, and should be done when the flowers have faded.

Richardia (Arum Lily). The white Arum Lily (*Richardia æthiopica*) is a favourite among amateurs, and the only objection to be urged against it is that the plants take up rather a lot of room. The pure white flowers appear during winter and spring, according to the temperature in which the plants are grown. The usual method of cultivation is gradually to diminish the supply of water to the roots after the flowering season, and in summer to put the plants out of doors, giving no water at all, and placing the pots on their sides. In early August the roots are shaken out and repotted. If the soil is kept slightly moist fresh growth soon starts. During winter a temperature of 50 to 55 degrees is suitable. A 5-inch pot will accommodate one or two roots. The best compost consists of turfy loam with which a little dry decayed manure is mixed. A miniature Arum Lily, called Little Gem, grows only from 12 to 18 inches high, and is more suitable for a small greenhouse than the ordinary kind.

The yellow Arum Lilies are particularly showy and just as easy to grow as the white ones. The dormant roots should be obtained

in early spring and potted singly in small pots and placed in the greenhouse (temperature 50 to 55 degrees). They will quickly start growth if kept moist, and later on will need repotting; turfy soil with a little manure or leaf-mould is suitable. When in autumn the leaves turn yellow less water is given, and during winter the soil is kept dry.

Sparaxis. These brilliant flowers, which may be obtained in various colours, need similar treatment to that described for *Ixia*.

Tuberose. The bulbs of this fragrant spring and early summer flower (*Polianthes tuberosa*) are obtainable in early spring and are potted singly in 5-inch pots in a compost of loam with which sand is mixed, all offsets being first removed. If watered carefully at first and more freely afterwards, they will be found quite easy to grow; they will come into bloom quickly or slowly, according to the temperature of the greenhouse. The bulbs are of no use after they have blossomed.

Vallota purpurea (the Scarborough Lily) is a charming and brilliant flower of late summer, its scarlet lily-like blooms then making a brave show in greenhouse or window. It is of the simplest cultivation, providing one remembers that the plant continues to grow during winter, and watering at that season must be attended to with care. If repotting becomes necessary it should be done as soon as the flowers have faded, but the *Vallota* will thrive for several years in the same pot. The plants should be given a slight rest for a few weeks in summer by keeping the soil rather dry. The time to make a start is in July.

Bulb-growing in Fibre. Practically everyone grows a few bulbs in fancy bowls filled with fibre, and the matter is such a simple one that there is little to be said about it. It is just as important to make an early start as when growing bulbs in pots of soil, and the work ought not to be delayed beyond the middle of October in the case of Daffodils, Hyacinths, and Tulips, while the earlier flowering kinds need to be dealt with in September. The specially prepared fibre sold by nurserymen is best for the purpose; it should be thoroughly moistened and stirred as it is put in the bowls. When the latter are about two-thirds full the bulbs are placed upon the fibre, and sufficient of the latter is then used to fill the bowls almost to the rim. Although the bulbs cannot be made as firm as when potted in ordinary soil, the fibre must be pressed about them to such an extent that they are not loose. Provided one does not put the bowls of bulbs in a small, stuffy cupboard (as many people unwisely do), any moderately dark and cool place will do, but it must be airy.

In some six or eight weeks roots will have begun to form freely, and when top growth commences the bulbs may be brought to the light. They need comparatively little water prior to this, but the fibre must not be allowed to get dry. Naturally, when the bulbs are in full growth, more frequent and, in bright weather, daily watering will be necessary. When planted in ornamental bowls in this way bulbs are usually grown in a room window so that their progress may be watched. This way is, no doubt, full of interest, but in such a position the leaves are liable to become

"drawn"—that is, to get unduly long and somewhat untidy.

If grown in a greenhouse the plants are likely to be sturdier. Narcissi and Daffodils are most satisfactory of all bulbs to grow in fibre, and there is sufficient variety among them to satisfy the most exacting. Hyacinths do well, but Tulips as a rule make too much leaf growth to be attractive. Of the smaller kinds Grape Hyacinth (*Muscari*), Squills, and Glory of the Snow (*Chionodoxa*) are to be recommended.

Hyacinths in Glasses. As is well known, Hyacinths may be grown with great success in glasses containing only water; the special Hyacinth glasses, in which the top is made to suit the shape of the bulb, are most convenient. The bulb must not touch the water; its base ought to be about $\frac{1}{4}$ inch, or rather less, above. A piece of charcoal in the water is said to keep it "sweet," but it should be changed occasionally. After a few weeks in a dark, cool, airy place, roots will form, and when leaves show the Hyacinths may be brought to the light. The single varieties are preferable to the double ones for glasses.

Still another method of growing bulbs is by placing them among pebbles in a bowl of water; but they do even better in fibre, so this somewhat unsatisfactory way is likely to be superseded. A remarkable plant that will blossom even when kept on the mantelpiece or elsewhere in a living room is the Monarch of the East (*Amorphophallus Rivieri*), which bears on a tall stem a dark flower similar in shape to that of the Arum Lily. After the flower has faded the corm must be potted.

CHAPTER 50

Greenhouse Flowers to Grow from Cuttings

A BUTILON. The drooping bell-like blossoms of the Abutilon, which open throughout the summer, are familiar to most garden-lovers. There are varieties with blooms of yellow, white, rose, crimson, and other shades. Abutilons are of shrubby or woody growth, and may either be grown as small plants in flower pots or be planted out and trained as climbers up the greenhouse pillars or beneath the roof. In the latter case good drainage must be provided: a suitable compost consists of turfy loam two-thirds, leaf-soil or dry decayed manure one-third, together with some silver sand. Propagation is by cuttings of the young shoots taken in spring and inserted in pots of sandy soil in a closed case in the greenhouse. If repotted when rooted, and again as becomes necessary, they will make rapid progress. The old plants need to be pruned rather hard in spring so as to keep them shapely and within bounds. A minimum winter temperature of 45 to 50 degrees is suitable. As the leaves fall in autumn it is obvious that little water is needed at the roots in winter.

Acalypha. A small group of plants, nearly all of which are remarkable for their beautiful leaves in different shades of red, yellow,

brown, and green. The flowers are insignificant, with the exception of one kind, namely, *Acalypha hispida*, also known as *Sanderiana*. This has bright green heart-shaped leaves, with handsome drooping "tails" of red blossoms. *Acalyphas* need a warm greenhouse, though they will succeed in summer without fire heat, and, in fact, they are sometimes bedded out of doors at that season. In winter they need a minimum temperature of 50 degrees. Propagation is by cuttings of the young shoots, dibbled in pots of sandy soil and placed in a closed case. If potted in a mixture of loam, peat, and sand the rooted cuttings will grow freely and reach an effective stage during the summer. Straggling shoots on older plants should be shortened in spring, and as soon as new shoots appear repotting ought to be done. The variegated leaved kinds, of which the best are *Macafeeana*, *marginata*, *musaica*, and *tricolor* or *Wilkesiana*, should be exposed to full sunshine except during the very hottest part of the day.

Owing to its drooping flower stems *Acalypha hispida* is seen at its best only when fairly tall. If good cuttings are chosen and the plants grown on freely they will have reached a height of 3 to 4 feet by the end of the summer, and be in

pots from 6 to 8 inches in diameter. If the shoots of these tall plants are "stopped" in the spring of the second year side branches will be produced, and thus form standards ; the drooping flower spikes are then seen to great advantage. All the *Acalyphas* are liable to be attacked by red spider, for which reason they should be freely syringed, especially on the under surface of the leaves, in hot weather.

***Aloysia citriodora* (Sweet-scented Verbena).** Everyone knows this favourite old-fashioned flower, which is grown in pots for the sake of its fragrant leaves. Protection from frost in winter is essential. Propagation is by cuttings made from the young growths which form when the plant is trimmed into shape in spring ; they soon form roots in pots of sandy soil in a closed case in the greenhouse. This plant thrives in ordinary compost of loam, leaf-mould, and sand ; it must be kept moist at the root in summer, though, as the leaves fall, sufficient only is needed during winter to prevent the soil becoming dust-dry.

Begonia. There are some splendid winter-flowering plants among the various *Begonias*, and they are not really difficult to grow in a sufficiently heated greenhouse. They need a minimum winter temperature of 55 degrees, or even 60 degrees, which is rather higher than the average small greenhouse is capable of maintaining. After the flowers are over in spring, cut down the stems to within about 4 inches of the soil and give them a slight rest by keeping the soil rather dry for two or three weeks. On watering being resumed fresh growths will soon form, and these are taken off as cuttings and induced to form roots in the usual

way in a closed case. When the cuttings are rooted they are in due course potted singly in small pots, loam and leaf-mould, in equal parts, together with sand, forming a suitable compost. Throughout the summer months a frame is a suitable position for the young plants. Shade from bright sunshine, ventilate freely in hot weather, and as the small pots become full of roots place the plants in 5-inch pots or in hanging baskets. In September the *Begonias* should be returned to the greenhouse, in which the temperature should not fall below 55 degrees at night.

Gloire de Lorraine, pink, and *Turnford Hall*, pale blush, are two great favourites among winter *Begonias*, having an abundance of small blossoms. Of those bearing larger blooms, though less profusely, a few splendid sorts are : *Altrincham Pink* ; *Elatior*, rose carmine ; *John Heal*, bright carmine ; *Winter Cheer*, carmine red, and *Emily Clibran*, salmon rose.

There are many other *Begonias* suitable for the warm greenhouse, some of which blossom throughout a long season ; a few well worth the attention of amateurs are : *Corbeille de Feu*, bright red, in bloom the greater part of the year ; *Dregei*, white, autumn and winter ; *fuchsioides*, reddish, summer ; *Knowsleyana*, blush, summer ; *Meltoniensis*, pink, summer and autumn. All are increased by cuttings. The varieties of *Begonia semperflorens* may be had in bloom practically throughout the year by taking cuttings at different periods.

The *Rex Begonias* are distinguished by possessing rather large and handsomely marked foliage of various shades of colour.

Increase in this case is by means of a method of treating the leaves. One or two of these are cut off and placed face downwards on a pan filled with sifted, sandy soil. Notches are made on the thickest of the leaf ribs immediately below a point where other veins or ribs originate. Peg down the leaves and scatter a little sand over them. Keep moist, warm, and shaded in the greenhouse, and small plants will form at the notches.

A few Tuberous-rooted Begonias of drooping growth make a delightful show in hanging baskets, such, for example, as Alice Manning, yellow; Fleur de Chrysanthème, salmon pink; and Golden Shower, apricot shades. They should be planted in the baskets in spring.

Bouvardia. Comparatively few amateurs appear to grow the Bouvardias, yet they are among the best of autumn greenhouse flowers, and offer no great difficulties. During the summer months they thrive in a cool and airy frame, and in September are brought into the greenhouse, there to blossom during the dull months. Propagation is by means of the young shoots that start growth in spring when the old plants are partially cut back; if inserted in pots of sandy soil beneath a closed case they will soon root. It then remains but to pot them singly in small pots, and subsequently in those 5 or 6 inches wide, and to pinch out the points of the shoots once or twice to ensure bushy plants. Suitable compost consists of loam with a little peat and leaf-soil and some silver sand. Bouvardias ought to be kept in the greenhouse until June, by which time they will have been repotted finally. A few of the best autumn-flowering varieties are: Alfred

Neuner, white, double; Bridesmaid, pink, double; Hogarth fl. pl., scarlet, double; President Cleveland, scarlet, single; President Garfield, pink, double. A summer-flowering Bouvardia is named Humboldtii corymbiflora; it has white fragrant blooms. The autumn-flowering variety Jasminiflora odorata is also fragrant.

Cheiranthus (Wallflower). This favourite is so commonly looked upon as an outdoor flower that amateurs often lose sight of the fact that there are at least two good Wallflowers for the greenhouse. These are Cheiranthus kewensis, which has blooms of mixed colouring (rose, yellow, etc.), and the Double German Wallflower, distinguished by stout, erect stems bearing close-set spikes of bloom. The Kew Wallflower is raised from seed sown in May or from cuttings taken in May and June; the old plants are cut back when the blooms are over, and fresh growths, suitable for cuttings, soon form. The cuttings are inserted in pots of sandy soil beneath a case in the greenhouse. When rooted they are potted singly, and during summer are grown in a frame. The shoots need to be "stopped" once or twice to ensure bushy plants. Ordinary potting compost is suitable. They must be brought into the greenhouse in early autumn. Seed of the Double German Wallflower is sown in June, the plants being grown in pots in a frame until autumn.

Clerodendron fallax. This showy flowering plant needs, during the greater part of the year, a warm greenhouse, but during summer it will succeed perfectly without fire heat. It is of shrubby growth, and is seen at its best when grown as a

sturdy plant confined to a single stem. In this way the lower half of the stem will be clothed with large heart-shaped leaves, and the upper half consists of a large terminal much-branched panicle of scarlet flowers. The panicle is of a broadly pyramidal shape, and a good example forms a really striking feature in the greenhouse or conservatory, where it is, as a rule, at its best towards the end of the summer. It needs, for the winter, a minimum temperature of 50 degrees, rising 10 degrees or so during the day. Early in the year, under the influence of brighter sunshine and warmer weather, the plants will commence to grow.

When the young shoots are from 3 to 4 inches in length they form suitable cuttings, which should be put singly in small pots in a mixture of loam, peat, and sand sifted through a $\frac{1}{4}$ -inch mesh. If plunged in slight bottom heat in a propagating case they will soon root, and in a warm greenhouse will grow freely. By the summer they will be established in pots 6 inches or thereabouts in diameter, and then flower freely. Two-year-old plants may be grown, and if repotted in the spring will form handsome specimens. This *Clerodendron* often ripens seeds, which afford a ready means of increase, though their germination is as a rule somewhat irregular. The seed is sown early in the year, and the young plants are grown as already recommended.

Coleus. Most of the *Coleus* are grown for the sake of their leaves, which are attractively and even brilliantly coloured; but one kind, *Coleus thyrsoides*, bears tall spikes of blue flowers in winter, and is in fact one of the best of winter blossoms. When the display is over

the stems are cut back to within 6 or 8 inches of the base, and young shoots soon form, which are taken off as cuttings and induced to form roots in the propagating case in the greenhouse. After having been potted and properly hardened off, the plants may be grown in a frame or airy greenhouse during summer, being brought under glass again in September. When the plants are about 6 inches high pinch out the point and retain three of the first shoots to form the main stems. Good plants can be grown in 6-inch pots, but those 7 inches in diameter are preferable for the final potting. Use loam with leaf-soil and sand, and give artificial fertiliser when the flower spikes appear. A winter minimum temperature of 50 degrees is suitable.

The *Coleus* grown for their handsome foliage are easily raised from cuttings inserted in spring. The old plants are kept rather dry at the root in winter; they are apt to perish if the temperature falls below 50 to 55 degrees. Seeds may be sown in spring, and so quickly do the plants progress that quite good specimens are obtained in late summer. The *Coleus* needs warmth, moisture, and exposure to the sunshine, so that the leaves may develop their full colouring, which they cannot do in shade. They like a compost of loam and leaf-soil, together with sand, and liquid manure is beneficial when the pots are full of roots. During summer watering and ventilation need more than ordinary care. The *Coleus* is liable to lose its lower leaves quickly if allowed to get dry at the root or if the soil is kept saturated, while the shoots soon become lanky and the plants ill-shaped unless the greenhouse is freely aired.

Coronilla. There are several hardy kinds of *Coronilla*, but the only one to be regarded as a greenhouse plant is *Coronilla glauca*. Though generally grown in the greenhouse, it is more or less hardy in many parts of the south and west of England. This *Coronilla* forms a freely branched shrub, clothed with greyish green leaves, somewhat suggesting those of the Common Rue. The bright yellow pea-shaped flowers are borne in clusters in spring, while frequently a succession is kept up for some time. It is not at all difficult to strike from cuttings taken in spring and inserted in pots of sandy soil. They must either be put in a close propagating case or covered with a bell-glass in the warmest part of the greenhouse, where they can be shaded from the sun. When rooted, the young plants may be potted in small pots in a mixture of loam, peat, and sand. As soon as they commence to grow the tips of the shoots should be pinched out in order to induce bushy growth. If shifted into larger pots when necessary, they will form neat little plants to flower the following spring. Older ones should, after flowering, be trimmed into shape by shortening straggling shoots and be repotted in the above-named compost. They may be placed outside during summer.

Cytisus racemosus. A popular greenhouse plant, and a great favourite with some of the growers for Covent Garden Market, who cultivate it in large quantities. Not only are well-flowered plants to be seen in florists' shops, but they are often hawked about the streets by costermongers. *Cytisus racemosus* naturally forms a dense-growing bushy plant, thickly clothed with

small, trifoliate, hairy leaves. The rich yellow flowers are borne in spikes about 6 inches long. They are produced in such profusion that when at their best the entire plant is quite a golden mass, while they also possess a pleasing fragrance. Seeds sometimes ripen, but this *Cytisus* is usually increased by means of cuttings, which, however, do not root so readily as those of many other plants. They strike best in clean, well-drained pots filled with a compost consisting of sand and peat with a little loam, the whole being passed through a sieve with a $\frac{1}{4}$ -inch mesh. A layer of silver sand should be placed over the surface of the soil. Half-ripened shoots, which are available about May, form suitable cuttings. They should be about 2 inches long, and the leaves removed from the lower half for the purpose of insertion. They must be dibbled in firmly, and covered with a bell glass in the warmest and shaded portion of the greenhouse. Old blooms should be cut off the plants that have flowered and the latter trimmed into shape. They can then be shifted into larger pots in a mixture of loam, peat, and sand, and be stood outside throughout the summer.

Eranthemum. The *Eranthemums* are pretty flowering plants, for which a warm greenhouse is necessary. Cuttings strike root very readily if taken in spring and placed in a propagating case in a warm house. A mixture of loam, leaf-mould or peat, and sand forms a suitable compost. The old plants may be cut back after the blossoms are over, and as soon as young shoots are produced they may be repotted and grown on as larger specimens for another year. The

hardiest and, taken altogether, the most accommodating of the *Eranthemums* is *pulchellum*, also known as *nervosum*. The flowers of this, which are borne in spike-like clusters, are of a delightful shade of rich metallic blue. They are borne throughout autumn and winter, and often well on into spring. Others are *Andersonii*, white marked with crimson; *cinnabarinum*, reddish pink; and *tuberculatum*, white. Of these, *Andersonii* and *tuberculatum* flower in the autumn and *cinnabarinum* in spring.

Eupatorium. Several *Eupatoriums* are exceedingly useful for greenhouse decoration; they are easily grown, and flower throughout autumn, winter, and early spring. The flowers, which bear a good deal of resemblance to *Ageratum*, are white or whitish; the plants form freely branched specimens of half-shrubby character. They vary in height from the 18 inches or thereabouts of *ianthinum* and *vernale* to the 4 to 5 feet of *adenophorum*. The first to bloom in the autumn is *riparium*, followed by *odoratissimum*. Then come *petiolare* and *adenophorum*, both of which flower for months together. After these, early in the new year, comes *vernale*, and in the spring *ianthinum*, very like an enlarged *Ageratum* with lilac-coloured flowers, unfolds its blossoms. Most of these *Eupatoriums* are very useful for cutting from, as they last a long time in water. The treatment of all of them except *ianthinum* is very simple, as cuttings put in the spring in a close frame will root in a very short time.

The young plants thrive in a mixture of 2 parts of loam to 1 part of leaf mould and a little sand.

The growing points should be pinched out two or three times to form a branched plant. They must be kept at first in the greenhouse, but may be placed in a frame later on, and from June onwards can be put out of doors, giving them much the same treatment as *Chrysanthemum*. Of course, they must be taken under cover before the autumn frosts set in. Good plants may be grown in pots from 6 to 9 inches in diameter. The smaller size is suitable for *vernale*, while *adenophorum* and *petiolare* need the larger ones. If smaller plants are desired they may all be limited to 6-inch pots. In that case a liberal use of stimulants will be beneficial. *Eupatorium ianthinum* succeeds best if kept in a greenhouse or frame throughout the year.

Fuchsia. The *Fuchsia* is a satisfactory plant for amateurs; it grows quickly, and is adaptable for training as a bush, pyramid, or standard, or as a greenhouse climber. There is no difficulty about getting cuttings providing one has a few plants, for if in February these are cut back partly, fresh growths will soon form, and cuttings can be made of them. In pots of sandy soil in a warm greenhouse they soon form roots. When, subsequently, they have been potted and repotted and are growing freely, one may either allow the stem to reach 3 or 4 feet high to form a standard, or so regulate the growth by pinching that a pyramid or bush is secured in due course. Even finer plants are obtained if cuttings are rooted in August and early September, for when fresh growth starts in spring they are already established and much valuable time is saved. During winter, when the leaves have fallen *Fuchsias* need no water

at the root ; they are usually stored in pots or boxes of soil in a frost-proof greenhouse or shed. Ordinary potting compost suits Fuchsias. During summer they may well be grown out of doors, though watering needs close attention. There are innumerable varieties, both single and double, of which the following are good : Double, Ballet Girl, Madame Cornellison, and Phenomenal. Single, Alice Hoffmann, Amy Lye, Earl of Beaconsfield, and Mrs. Marshall.

Heliotrope (Cherry Pie). Although commonly grown for planting out in summer flower-beds, Heliotrope is, of course, charming in a greenhouse, and especially when allowed to make its way up a pillar or trellis against a wall. It gives little trouble when grown in the latter way, for, providing it is planted in a well-drained border of turfy soil, all that one has to do in the way of pruning is to cut back some of the straggling shoots as soon as the chief flower display is over. Such plants are in bloom more or less all the year round in a heated greenhouse. Standards of Heliotrope are attractive and quite easy to grow ; instead of pinching out the point of the shoot to ensure a well-branched bush, the rooted cutting is allowed to grow unchecked until the desired height of stem is reached. Heliotrope cuttings root readily in spring in a warm greenhouse, and the plants grow rapidly in ordinary compost of loam, leaf-mould, and sand. The ends of the shoots must be pinched off once or twice to get bushy plants. During winter only sufficient water is needed to keep the soil slightly moist. Lord Roberts and President Garfield are two of the best Heliotropes of ordinary colour ;

in White Lady the flowers are white, or very nearly so.

Hydrangea. There are several kinds of Hydrangea, but that which is usually grown in pots by amateurs is Hydrangea Hortensia, of which there are named varieties. However, the common pink is as attractive as any. Hydrangeas are propagated by means of cuttings taken late in July or early August. They are made from shoots which are moderately firm (not soft and "sappy ") at the base, and are put singly in small pots of sandy soil. If kept in a closed frame for a few weeks and moistened when necessary, roots will form, and if the plants make good progress they may be repotted into 5-inch pots before autumn ; alternatively, they may remain in small pots until spring. During winter the Hydrangeas must be kept quite cool, but just safe from frost, and very little water is needed. If plants treated in this way are well grown they produce one large head of bloom in spring, and in this form are very popular.

To grow large specimen plants—which are, after all, of far greater value to the amateur—blooms must be sacrificed the first season, the stem being shortened to two or three buds, so that side branches may form. Keep the plants in the greenhouse during spring, giving them quite cool treatment, for they are almost hardy plants, and during summer and autumn place them out of doors so that the stems may become properly matured. Upon this the following year's flower display largely depends. During winter treat as advised for small plants. In spring, of course, more water must be given as signs of growth become apparent.

Many amateurs spoil the show of bloom by pruning too much. Once the plants are well established in large (say, 8 or 9-inch) pots they need little pruning, except to cut back in spring such flowerless shoots as threaten to destroy the symmetry of the bush. When the plants have become straggling and unsightly it is a good plan to cut back severely half the number one spring and the others the following spring; thus some of the plants will blossom while others are making fresh growth. When the plants are thoroughly well rooted in large pots or tubs, weekly applications of diluted liquid manure are of great benefit. The simplest way to make the pink-flowered *Hydrangea* produce blue blossom is, every third or fourth day, to give the roots water containing alum (one teaspoonful to the gallon); this treatment may be continued from the time the buds are seen until they begin to open.

Impatiens (Balsam). The annual Balsam (which is referred to in the chapter on "Greenhouse Flowers to Grow from Seeds") is better known to amateurs than the perennial kinds, some of which are very showy. The best are Sultani, carmine rose; Holstii, vermilion; Herzogii, orange salmon; and Olivierii, lilac mauve. Seeds of Sultani and Holstii are obtainable, and afford a ready means of increase if sown in February or early in March, in a temperature of 60 degrees or thereabouts. However, all those named can be grown from cuttings taken in spring as soon as the young shoots are from 2 to 3 inches in length. They must be put into pots of light sandy soil and placed in a close propagating case in a warm greenhouse. They should not be

kept too moist, for owing to their somewhat succulent character they are liable to "damp off." If potted in a mixture of loam, leaf-mould, and sand the young plants will grow freely and flower during the summer. They should be stopped once or twice. When the pots are furnished with roots an occasional stimulant will greatly prolong the season of blooming. A temperature of 50 to 60 degrees is necessary to their well-being during winter.

Lantana. This pretty, half-hardy shrubby plant, which during summer bears somewhat verbenalike heads of bloom, in various colours, is freely used in bedding out, but amateurs too rarely give it a place in the greenhouse. There is no difficulty at all about its cultivation. It is increased by cuttings in spring, like *Heliotrope* or *Fuchsia*, grown in a cool and airy greenhouse during summer, and in winter must be placed safe from frost and given little water at the root. To obtain shapely plants the shoots must be topped once or twice. There are many varieties, chief of which are *Drap d'Or*, orange yellow; *Pluie d'Or*, yellow; *La Neige*, white; and *Chelsea Gem*, crimson.

Libonia floribunda. This is an attractive plant for the greenhouse in winter; at that season it bears narrow, tube-shaped blooms of red and yellow colouring, and the display is continued for a considerable time. It is increased by cuttings in spring; they are formed from young shoots that develop after the old plants have been pruned back, and are rooted in sandy soil in a closed case in the usual way. Repotting in due course, and finally into 5 or 6-inch pots, is necessary. During summer the plants are grown in a cool airy frame, the

shoots being "pinched" to induce well-branched plants. In September they are removed to the warm greenhouse, and there as winter approaches will come into bloom.

Luculia gratissima. This is a shrub that succeeds perfectly under greenhouse treatment. The flowers, which appear in winter, are disposed in large terminal heads, suggestive of those of an *Hydrangea*; they are of a bright rose colour and very sweetly scented. The *Luculia* does not flower freely until it is of fair size. It succeeds best when planted out in a well-drained border in the greenhouse in a mixture of turfy loam, peat, and sand. When it has done flowering the shoots of the preceding year's growth should be cut back to within three or four buds of the base and the plant subsequently syringed freely in order to encourage growth. The *Luculia* is also well suited for clothing the back wall of a greenhouse, provided it gets a reasonable amount of light. It does not generally thrive very well in pots, and its propagation is somewhat difficult. Seeds are sometimes obtained, but the young plants raised therefrom do not flower so freely as those obtained from cuttings. Failures to strike these are not infrequent, the greatest measure of success being obtained when they are formed of the partially ripened shoots in May or June. They should be put in small pots of sandy soil and plunged in slight bottom heat in a propagating case in a warm greenhouse.

Marguerite (Paris Daisy). The *Marguerite* is so well and so commonly grown that no good purpose would be served by devoting much space to its notice. It is a half-hardy shrubby plant which is

easily raised from cuttings in spring and summer; needs perfectly cool treatment during summer and protection from frost in winter. Excellent plants may be grown in 5 or 6-inch pots, or they are suitable for window boxes, and make handsome specimens for large pots and tubs. Ordinary compost is suitable—loam with a little leaf-mould and sand—and when the plants have filled their pots with roots liquid manure or artificial fertiliser ought to be given weekly. The finest specimens are grown by taking cuttings in spring and removing all flower buds as they show until the following spring. In order to obtain well-branched plants it is necessary to pinch out the points of the shoots several times during summer. The *Marguerite* is hardy in mild districts, and in others a winter temperature of 45 degrees is high enough. The best variety is *Mrs. F. Sander*, a beautiful double white flower with raised centre.

Mimulus (Musk). Though the common *Musk* (*Mimulus moschatatus*) is thoroughly hardy, it was, from its delicious fragrance, much admired when in the greenhouse or even in the cottage window. Unfortunately, this old-fashioned plant has completely lost its fragrance, in an unaccountable way, in every part of the country. It is, however, still worth growing as a pot plant for its attractive yellow flowers. Far more showy from a flowering standpoint is what is known as *Harrison's Musk*, the flowers being much larger and of a rich yellow colour. This is largely grown in pots for greenhouse decoration. In order to obtain good decorative specimens in pots a good plan is, in March, to dig up a

few clumps from the open ground and place them in a box in the greenhouse. They will then quickly start into growth, and when about 1 inch high they can be carefully lifted, each shoot with its attendant rhizome. Half a dozen of these dibbled in a 5-inch pot will grow freely, and soon form effective little specimens. If there are none in the open ground, the roots of those that have been depended upon the previous year may be employed for the production of young plants.

Nerium Oleander. The Oleander is a familiar shrub of loose growth that bears bunches of rose-coloured blossoms in summer. Many amateurs fail to induce it to bloom freely, but the following notes indicate the chief cultural details. It is readily propagated by cuttings inserted in jars of water in the greenhouse, under bell-glass or hand-light, during spring and summer. Suitable potting compost consists of 3 parts fibrous loam, 1 part leaf-mould, a sprinkling of bonemeal or dried cow manure, and coarse sand to keep the compost porous. Spring is the season for potting the plants. For the first two or three years annual potting, each time into a larger pot, is necessary; but afterwards, as the plants increase in size and age, the necessity for giving them larger pots decreases; potting once in from three to five years is then sufficient. Old plants which have become too large for the greenhouse may be cut hard back, when new growths are forming in the autumn, after flowering, and repotted in the spring in the same size pot.

Oleanders require the protection of a cool greenhouse in winter. Towards the end of May stand the

plants outside in sunny positions until the flower buds are nearly ready to expand, some time from about the end of June until September, then return them to the greenhouse. Oleanders delight in ample supplies of water, including liquid manure in summer. Almost at the same time as the inflorescence commences to develop at the end of a shoot several young growths push out from the base of the flower stem. These must be removed as soon as noticed, or they will develop at the expense of the flowers.

Any pruning or shortening of the growths deemed necessary should be done after flowering in autumn. Keep the plants growing steadily in winter, with ample light, and enough heat to keep out frosts, but not sufficient to excite the plants to make long, sappy shoots.

Pelargonium. Most people are so accustomed to referring to the popular summer bedding Pelargoniums as Geraniums that a reminder of the error is necessary. The Zonal Pelargoniums, to give them their correct title, are as valuable for winter blooming in the greenhouse as for outdoor planting in summer. It is necessary to take cuttings in March and April, and insert them in sandy soil in a frost-proof frame or greenhouse. When well rooted they are potted singly in 2½ or 3-inch pots, and subsequently into those 5 or 6 inches in diameter in which they will bloom. Throughout the summer months the plants are best grown in a frame freely aired so that the growth may be sturdy, short-jointed, and well "ripened"; then may a good display of flowers be expected. In September the Pelargoniums are removed to the green-

house, a suitable minimum temperature for autumn or winter being 55 degrees. If flower buds show on the plants while in the frame they should be picked off until within a few weeks of the date of removal to the greenhouse. A suitable compost for the final potting consists chiefly of turfy loam with which a little leaf-soil and a free sprinkling of sand are mixed. Bonemeal at the rate of a 6-inch potful to a bushel of soil may be added. Potting must be done firmly, otherwise the plants will make long-jointed, sappy shoots.

Show and Fancy Pelargoniums are very beautiful in early summer, in May and June, though few amateurs attempt their cultivation. The method of treatment is quite simple. When the plants have finished flowering they are placed out of doors or in a frame, fully exposed (except in heavy rain), and less water is given to the roots; in fact, they are partially "dried off." In a few weeks the stems turn brown and become hard, showing that they are in a state known to the gardener as "ripeness." Then they are cut back to within an inch or two of the base. When new growths appear the soil is kept moist again, and the plants are shaken out of the old pots and repotted in small pots. If necessary, some of the fresh growths may be taken off as cuttings, but the largest specimens are obtained by "growing on" the same plants again and repotting as becomes necessary.

Salvia (Sage). The Scarlet Sage (*Salvia splendens*) and its varieties make a brilliant display in the greenhouse in autumn and early winter, and are easily grown. Cuttings formed of fresh shoots in

spring soon take root in pots of sandy soil in the greenhouse propagating case. Repotting singly into small pots becomes necessary in the course of a few weeks; subsequently 5-inch, and finally 7 or 8-inch, pots are required to produce fine specimens. The usual potting compost of loam with a little leaf-soil and sand is suitable. From June until September the plants ought to be grown in a frame and given plenty of air, the shoots being stopped several times to ensure well-branched plants. The Blue Sage (*Salvia patens*), which has tuberous roots, is valuable for summer flowering in the greenhouse and quite easy to grow; one has merely to start the roots into growth in spring in boxes of soil, and to repot as becomes necessary. A pretty blue autumn-flowering kind for the greenhouse is *Salvia Pitcherii*; it needs similar treatment to that described for *Salvia splendens*.

Solanum (Winter Cherry). There are many *Solanums* suitable for the greenhouse, but easily the most popular kind is *Solanum capsicastrum*, commonly called the Winter Cherry, owing to the resemblance of its orange red berries to that popular fruit and to the fact that they are at their best in winter. This is an easy plant to grow, and may be raised from seeds taken out of the berries when these are ripe; the seeds ought to be sown at once in pots of light soil in the greenhouse. The usual method of propagation is to take cuttings in spring, and if the old plants are pruned back partly, fresh shoots from which to make cuttings soon appear. If put in light soil beneath a hand-light in the greenhouse the cuttings soon form roots.

CHAPTER 51

Room and Greenhouse Foliage Plants

MANY plants grown for the sake of their foliage are handsome in themselves, and are useful for placing among plants possessing brilliant flowers, which their greenery shows off to greater advantage. All thrive in ordinary potting mixture of loam with a little leaf-soil and sand, and need shade in bright weather during spring and summer. If exposed to full sunshine the leaves lose their characteristic green colouring. Cool, moist, and shady conditions are their chief requirements.

Watering must be done with care, otherwise the lowest leaves turn yellow and fall off. Give water only when the soil begins to get dry, then fill the pot to the rim, and give no more until it is required again. In winter once a week will probably be often enough to water, whereas in summer the plants may require moisture on alternate days, or even every day. A minimum winter temperature of 50 degrees is suitable.

Aralia Sieboldi. This has large, rich green, deeply lobed leaves, and thrives almost as well in a room window as in the greenhouse. As the plant ages the lower leaves often fall, but a rejuvenated specimen can be obtained by the following practice: Make a slit half-way through the stem just below the lowest good leaf, place a small

stone in the slit to keep it open, tie a bunch of moss all round, and keep the moss moist. If the plant is kept in the warm greenhouse for some weeks roots will form and enter the moss. As soon as they have made their way through, cut the stem and pot the new plant. It must be kept warm and given little air for a week or two so that it may quickly become established in the flower pot.

Asparagus Sprengeri is a favourite plant, with graceful foliage, that is suitable for growing in a basket, for training on a wall, or round stakes. It should be potted in peat and loam with sand freely intermixed. This is an excellent plant for rooms; it is increased by sowing seeds or dividing the plant in spring.

Aspidistra lurida is probably the most widely grown of all plants. Its needs are simple. Providing it is placed in a well-drained pot, in good compost, kept out of draughts and bright sunshine, and watered only when the soil is moderately dry, it will thrive for years. When a plant gets too big for its pot it should be divided in early March, each portion being repotted separately. The leaves must be sponged at least once a week. Curious brownish flowers are often produced by established plants, and may be seen in spring low down

among the leaf stalks. The variegated variety is a handsome plant.

Araucaria excelsa (the Norfolk Island Pine) produces tiers of handsome, flat, frond-like branches, and is equally suitable for window or greenhouse.

Coleus. The many varieties of *Coleus* possessing brilliantly and variously coloured leaves are particularly handsome foliage plants, which, however, are less generally useful than many others, owing to their inability to withstand rough treatment. Details of cultivation are given in the chapter on "Greenhouse Flowers to Grow from Cuttings."

Cyperus alternifolius is a quaint and attractive plant, having whorls of leaves arranged at the top of the stem in somewhat similar fashion to the spokes of a wheel. It needs plenty of moisture at the root in summer, and may be increased by cutting off the whorls of leaves with a piece of stem attached, and placing these on sand in a propagating case.

Dracæna is largely grown for decorative purposes. There are several kinds, of which the most useful for amateurs is probably *Bruantii*, having broad green leaves. Careful watering is necessary, and the plants must not be exposed to draughts or bright sunshine. When the lower part of the stem gets bare, recourse may be had to the same treatment as recommended for *Aralia*.

Ficus elastica (*Indiarubber Plant*). This is a general favourite, and its large, handsome leaves are familiar to all plant-lovers. It is quite easily grown if given such treatment as has been outlined. When the stem gets bare the upper

part may be made to form a fresh plant in the way already described.

Grevillea robusta, commonly known as the Australian Silky Oak, is a delightful foliage plant for the greenhouse; its leaves are deeply divided, almost fern-like in appearance. It thrives with ordinary care, and may be raised from seed sown in spring. It is quite useful as a room plant during summer, but should be returned to the greenhouse for the winter.

Isolepis gracilis is a charming little grass-like plant, much used as an edging to the greenhouse stage, for which purpose it is not surpassed. The plants are grown in small pots, and the leaves droop over the edge of the staging, forming a delightful margin of greenery. It needs warmth and moisture, and should have a minimum winter temperature of at least 50 degrees.

Ophiopogon. The variegated forms of this plant, known as *Jaburan variegatum* and *spicatum variegatum*, having narrow green leaves marked respectively with yellow and cream, are unusually attractive and most suitable for small greenhouses. They are perfectly easy to grow in ordinary potting compost, and a temperature of 45 degrees in winter will do them no harm.

Palms. To grow Palms satisfactorily one must provide warm, moist, and shady conditions. During bright summer weather comparatively little, if any, artificial warmth is necessary; however, a minimum night temperature of 50 degrees in summer and 45 degrees in winter must be maintained. Palms require a lot of water in summer, dislike draughts and exposure to strong sunshine and extremes of temperature. Yet some of them are



The Polyanthus or bunch-flowered Primrose is a favourite plant for spring flower-beds. The blooms of modern varieties are large and richly coloured.



Freesias are delightful winter flowers for a slightly heated greenhouse; they are of mauve, heliotrope, orange, yellow, rose, and other shades of colour and are fragrant.

more accommodating than others ; for instance, *Geonoma gracilis*, *Kentia fosteriana*, *Rhapis flabelliformis*, *Latania borbonica*, and *Chamærops humilis* are most likely to succeed in conditions that are not ideal. The last two named produce large leaves and are less graceful than the others. Palms do not often need repotting, but when this becomes necessary it should be done in March, loam and peat in equal quantity, with sand, forming a suitable compost.

Smilax, or, to give it its botanical name, *Myrsiphyllum asparagoides*, is a graceful twining plant producing slender, leafy stems that are in great demand for decorative purposes. It thrives best in a greenhouse where the temperature does not fall below 50 degrees, and in summer likes warmth, moisture, and shade. It may be propagated by sowing seed or dividing the roots in spring, and thrives in ordinary potting compost ; or it may be planted in a small border

at the foot of the greenhouse wall and trained on a trellis there. In any case, it must be given sticks or some other support, or may be trained up string.

Tradescantia. There are several kinds of *Tradescantia* having green or variously marked leaves, all of which are useful for planting in hanging baskets or for growing in pots to form an edging along the greenhouse staging. They are of drooping growth, and the slender, leafy stems will soon reach from the staging to the floor. Propagation is very easily carried out by means of cuttings, which root readily in spring, summer, or autumn. Ordinary potting compost is suitable. *Tradescantia* will even grow beneath the staging, and there form quite a carpet of greenery. The green-leaved kind is hardiest of all, and a winter temperature of 45 degrees does it no harm ; but the variety *zebrina*, which has coloured leaves, is more tender and needs a warmer greenhouse.

CHAPTER 52

How to Grow Chrysanthemums

THE initial work begins while the cuttings are on the old plants and even before the blooms on the latter have been cut. If, through overcrowding or the grouping of the plants in a rather dark glasshouse, the basal shoots (from which cuttings will be made) become weak, the cultivator will start the next season's work greatly handicapped. Therefore it is wise to take care of the cuttings long before the time comes for inserting them.

As soon as it is possible to do so, place the old plants in a light position—on a front stage in a greenhouse for preference—after the stems are cut down. If there are plenty of cuttings coming through the soil, remove all those on the stem, but retain the latter if basal cuttings of particular varieties are scarce. Loosening the surface of the soil with the aid of a pointed stick and spraying occasionally with tepid water will induce the development of cuttings.

Inserting the Cuttings. The soil compost for the cuttings should be prepared in good time. I use the following: Fairly old fibrous loam, 2 parts; leaf-soil, 1 part; and pounded bricks and old mortar rubble, 1 part. A compost of such materials remains "sweet" round the roots and assists drainage throughout the season. Manure is

not used; it is not required at this stage. If old mortar rubble and brick cannot be obtained, use coarse sand instead.

The flower pots should be small and deep. If, finally, one plant is to occupy a large pot, insert one cutting near the side of a small pot; if two plants are eventually to occupy a large pot, insert two cuttings in the small pot. These two cuttings are to remain undisturbed and not be separated as the work of repotting goes on—the two are shifted to larger pots as one plant.

When to Propagate. The naturally late-flowering varieties should be propagated first—from November to mid-January. The medium-early sorts should be propagated from mid-December to the end of January. The early-flowering sorts should be rooted from mid-January to the end of February. The singles and the September and October flowering varieties should be rooted during the latter part of February and the first week in March. The resultant plants are intended to make a "break" or be "stopped" in March, April or May for the ultimate production of first or second crown buds.

Then there are certain varieties, cuttings of which should be inserted in March, so that the plants will

bear one bud and one bloom ; the first bud that appears on these single-stemmed plants is retained and allowed to develop into a flower. The approximate dates when such buds appear are from mid-July to August 7th. The varieties that do well so treated are the following: Majestic, William Rigby, Mrs. Gilbert Drabble, Victory, Miss Lily Edwards, Duchess of Westminster, Mrs. R. C. Pulling, Major Spencer Chichester and Mrs. Spencer Chichester. Of course, there is only one bloom on each plant, but two plants may be finally potted into the flowering pot, namely, a 9 or 10-inch one. A single plant will do very well if finally potted into an 8-inch pot.

Early Treatment Under Glass.

At no time should Chrysanthemum plants be subjected to a high temperature. From November to the end of February a slightly heated greenhouse will be suitable, and the young plants should during that time be placed on a stage or shelf. From March 1st to mid-April they should be placed in a cold frame, and the glass "lights" of the latter must be removed entirely on fine days and well tilted at night to admit plenty of air. From mid-April onwards the "lights" should be removed altogether except during heavy rain, hailstorms, snow showers, or when the air at night becomes frosty.

Repotting the Rooted Cuttings.

Fibrous loam two-thirds and half-decayed leaf-soil one-third should form the bulk of the potting compost. To every 3 bushels of this mixture add 1 peck of horse manure, a 6-inch potful of bonemeal, a 10-inch potful of coarse sand or old mortar rubble—the latter for preference—and a 7-inch

potful of wood ashes. A compost of this kind will remain fresh and in good condition throughout the year. It is not wise to use a number of concentrated manures as well, but failing bonemeal and horse manure, a special Chrysanthemum manure should be used.

From time to time the repotting work should be done, just as each plant is in need of more rooting space. The final potting will generally take place during May and the first half of June. Do not "stop" plants at the same time that the potting is being done, but about one week before or after. The latest flowering varieties should be "stopped" once—during the early part of April. The medium-early sorts should be "stopped" late in April or during the first week in May. The early-flowering varieties should not be "stopped" but allowed to make the first natural break, and the crown buds will form naturally, too. Very early-flowering varieties, such as Viscount Chinda, should be "stopped" twice—the middle of March and about June 7th. Incurved varieties also do best when allowed to make natural breaks ; so, too, do single-flowered sorts. The buds on the last named may be taken in the form of first crowns or terminals.

The best position for the plants during summer is an open one, but sheltered from north, east and south-west winds by fences at a suitable distance away.

Watering, Top-dressing, Feeding.

Water should be applied carefully at all times, and especially after each repotting of the plants. As the pots fill with roots it will be necessary to examine them three times a day during a spell of hot weather. Feed-

ing with weak doses of soot water and liquid manure should start directly the large pots begin to fill with roots—this will be about mid-July. Top-dressing is carried out by adding a small quantity of sifted soil mixed with chemical manures sold for the purpose, and a scattering of bonemeal. Vary the manures and be sure that all doses are under rather than above full strength. Continue to feed until the blooms are half developed.

Tying and Disbudding. As the plants grow, tie the stems to neat stakes, always allowing room for the stem to swell freely. All small side shoots should be rubbed out regularly. When the bud can be seen clearly and it is free from the side shoots, "take" it by gradually removing the side shoots in "taking" crown buds. If the buds are terminals, gradually remove the small side buds, and finally retain the central one.

Placing the Plants Under Glass. It is not wise to recommend exact dates in September or October, as the buds may be too forward or too backward. The best plan is to place the plants under glass just before the bud opens, but when the flower petals can be seen. If the scales covering the petals burst, moisture may enter the bud and, lodging there, cause its decay. Admit plenty of air to the greenhouse and do not shade the glass at first, but as the colour of the flower petals shows reduce the amount of ventilation and begin to shade them from bright sunshine. Do not, however, "coddle" the plants. Very great care should be taken to keep the blooms free from drip from the roof and from too much atmospheric moisture.

Large-flowered Japanese Chrysanthemums. Mrs. R. C. Pulling, lemon yellow; Majestic, golden amber; Miss D. L. Athron, reddish bronze; Mrs. Geo. Monro, junr., deep crimson; Mrs. B. Carpenter, rose; Julia, bronze; Rose Day, rich pink; Dawn of Day, orange, shaded bronze; Mr. T. Slack, terracotta red; Sulphur Queen, sulphur yellow; Mr. Lloyd George, rich crimson; Rycroft Triumph, rich crimson.

Mrs. C. Russell, crimson, gold reverse; Mr. T. W. Pockett, pink, silver reverse; Sterling Stent, beautiful pink; Nan Luxford, silvery pink; Norman Davis, velvety crimson; Golden Champion, golden bronze; Mrs. S. Noble, light buff; Miss Joyce Boulds, lemon yellow; Mrs. A. Brown, white on early buds; J. Symonds, canary yellow; Mrs. H. Wells, white, green centre; Mrs. F. J. Fleming, rosy lilac.

Sir Edward Letchworth, rosy purple; Edith Cavell, rich chestnut; Helmuth, deep crimson; Miss Lily Edwards, crimson, gold reverse, and Duchess of Westminster, rosy mauve.

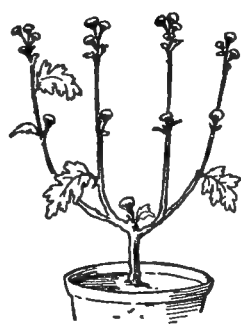
The Mysteries of "Buds and Breaks." It is a strange thing that there should be so many people who are able to admire and enjoy a well-grown Chrysanthemum bloom, and who, at the same time, are entirely ignorant as to how it has been possible to produce such a beautiful flower. Perhaps, indeed, it is a good thing that admiration and enjoyment can exist without knowledge (as, for instance, with one's wireless set!); but in the matter of a Chrysanthemum, the amateur who knows can enjoy and admire in a far more real sense than the amateur who does not know.

"What bud did you take? When did you take it? Did you stop, or was it a natural break? What did you feed with?"

As a matter of fact, it is the peculiarity of the growth of the plant, and the possibility of interfering successfully with its natural development, which spins the web of fascination over all Chrysanthemum growers—a web from which there is no escape after you have once been caught, and in whose

meshes you are compelled to work from December to December, as a slave for his master.

Many an amateur is at work from the dark days of mid-December until spring—working, waiting, and watching—and, if he has given sufficient care to his cuttings, a group of healthy young plants greets him each morning from the shelves of his greenhouse. For many, however, the Chrysanthemum season begins with the

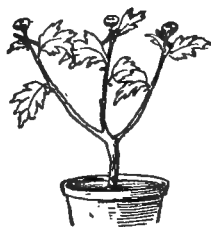


Terminal Buds

Crown Buds

First Break.

Shows what is meant
by Buds and Breaks



Some varieties need
1st Crown Buds removed
to get better Buds on 2nd
Crown

Side shoots and bud clusters
are removed to retain the
best shaped Terminal Bud
for exhibition purposes.

arrival of rooted cuttings from the grower ; and this chapter is written with a view to assuring the beginner that with a little trouble, but without any real difficulty, the general peculiarities of the *Chrysanthemum*'s growth and the terms in common use by growers can be understood and mastered in one season ; and as this knowledge is essential for the right cultivation of the large-flowered Japanese varieties it is worth having.

"Buds and Breaks" Explained.

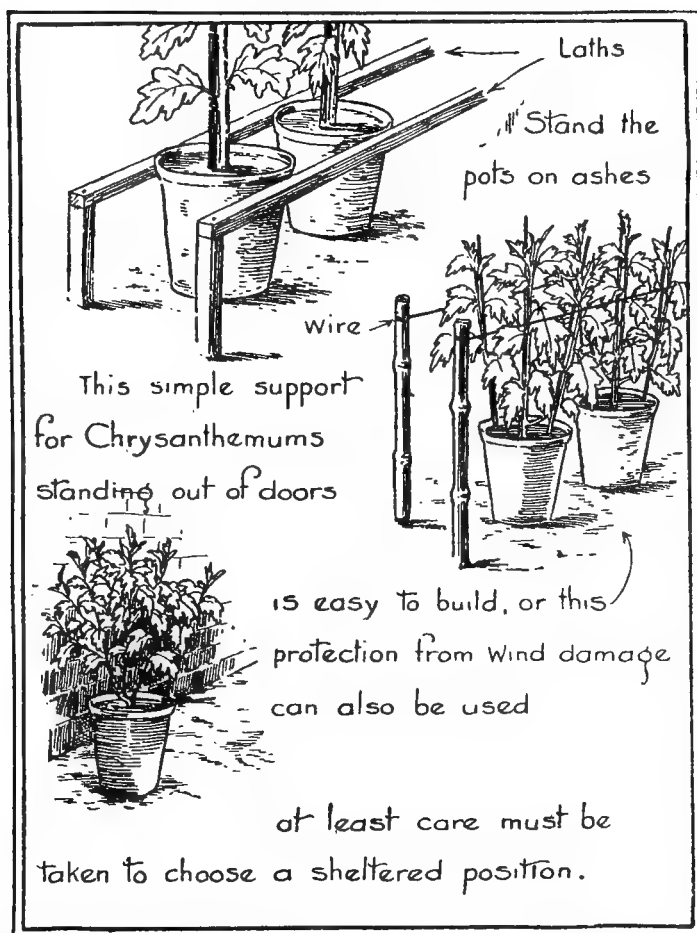
When the young plant has grown for a certain time, a flower bud is formed in its apex ; this is known as the break bud, because, after it is formed, lateral branches break from the main stem just below the bud. As these branches begin to grow the break bud dies ; and when they have grown for a certain time a new bud is formed in the apex of each branch. This bud is known as the crown bud, or first crown. After these buds are formed, a second lot of branches breaks from below each of these first crown buds, and when these new branches have grown for a certain time a second crown bud is formed in the apex of each, and a third lot of branches breaks from below each of these second crown buds. These, as a rule, are the last branches which will be developed, and after they have run on for a little a group of flower buds will be formed round the point of each ; these groups of buds are known as the terminal buds, because they mark the end of the plant's growth for the season.

If you take a pencil and draw a very rough sketch of a plant growing along these lines, you will get a clear idea of what happens. Suppose, for instance, three

branches are formed when each break occurs, you will find there will be at the end twenty-seven groups of terminal buds. This does not look like a plant with one great bloom, 10 inches in diameter. No ; but this is where that interference with the natural growth of the plant is brought into play. Take a large-flowered Japanese variety with a second crown flower. The young plant began to grow in the usual way ; but when the break bud formed, only one of the branches, which grew from beneath the bud, was allowed to remain ; the others were pinched out when very small, and the break bud was taken off too.

Similarly, when the first crown bud was formed, only one of the next lot of branches, which broke from beneath it, was kept ; the others were pinched out. And when the second crown bud appeared all the branches which broke from below it were taken away, and the second crown bud was left to grow. The plant had now become just one stem with a bud on the top ; and what happened then was that all the nourishment that the roots took in from the soil went to build up that second crown bud, which subsequently developed into a magnificent bloom.

Of course, success in the cultivation of the large-flowered *Chrysanthemum* does not simply depend on a knowledge of the technical terms used to denote certain aspects of its growth, but such knowledge does mean that you have grasped the principles of the plant's growth, without which it is impossible to achieve success. Such things as potting on, composts and feeding, however important, come second, and experience will gradually make



for perfection in these matters ; but once an amateur has really understood the artificial interference which is necessary for the production of big flowers, there is no reason at all why he should not be able, after a little experience, to grow quite excellent flowers.

The catalogues of growers describe, in the accepted terms, the interference in the plant's natural growth which is necessary for each variety of the big-flowering

Japanese Chrysanthemums — e.g., natural break, first crown—and beginners will be well advised, at any rate for a time, not to think of stopping the plants, but to stick to those varieties which are to be grown with a natural break. Anyhow, don't let any amateur think that he must only expect to grow small blooms, and that large flowers with thousands of petals must be left to the professional grower and to the amateur with an experienced

gardener. The big flower is the amateur's flower, and if you have no large-flowering variety with which to experiment, write to a grower for a few plants; he will be only too glad to advise you which varieties are reliable and easy doers.

How to Grow Big Chrysanthemum Plants. A particularly interesting way of growing Chrysanthemums is so to treat the plants that they form large specimen bushes and produce hundreds of blooms. In America this system is much in vogue, as, in fact, at one time it was in this country twenty years ago. It is likely that these immense specimen plants will again become popular, as the schedules of some horticultural societies now reserve a class or two for them. But, apart from anything else, a big, well-trained plant is a pleasure to look at, and is really very little more troublesome to grow than a smaller one.

The correct definition of a specimen Chrysanthemum, as far as its exhibition is concerned, is that it shall possess a single stem. If, however, there is no intention of exhibiting in public, the grower has the alternative of making use of an old plant with three or four fresh shoots at the extreme base, or even growing two or three plants together. To return to the single-stemmed plant.

When to Take Cuttings. The best type of cutting springs from the base of the plant, usually coming up through the soil, as those on the stem are not always to be depended upon. In November or December the selected shoots should be cut off just below a joint so as to leave them about 2 inches long. There should be no difficulty in rooting them, and, in order to avoid any

check later, it is advisable to place each cutting in a small flower pot. Use sandy soil, and make it firm in the pot. Water through a "rose" on the spout of the watering-can, and place the pots of cuttings in a propagating frame or glass-covered box on the greenhouse bench where it is cool. In a fortnight or so the formation of roots will begin, and a little air may be admitted to the box or frame; when it is seen that the leaves can withstand the atmosphere of the house without drooping, it is time to remove the pots to a shelf near the roof glass, in order to encourage sturdy progress.

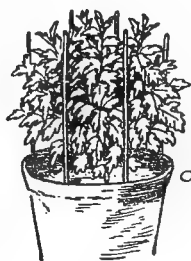
The First Repotting. From this stage it should be the aim of the grower to keep the plants growing sturdily, by watering and ventilating carefully. When it is seen that the cuttings are nicely rooted in 2½-inch pots, they should be repotted in 4-inch pots. See that they are clean, as dirty pots mean broken roots when it comes to turning them out, and place a few crocks in the bottom for drainage. The compost best suited to the roots at this period is two-thirds fibrous loam, one-third well-decayed manure, and a sprinkling of sharp sand. Manure from a spent mushroom or a hot bed is to be preferred, or, failing that, leaf-mould may be used. Pot firmly, but without injuring the roots, and be sparing with water for a week or so afterwards, as an excess is bound to be followed by a yellowing of the leaves.

"Stopping" the Shoots. If all has gone well, the best plants will be about 6 inches high by April, and it is time to make them branch out. This is done by pinching off the extreme growing point, or top,

and three or four more shoots will, in due course, result. At this stage the days will be getting warmer and the conditions under glass will not be to the best interests of the plants, so that it will be to their advantage to be removed to a cold frame. Progress will not be as rapid as before, but it will be sure, and before the pots are quite full of roots another shift into flower pots 6 inches wide will be necessary. Exercise the same care in cleanliness

and draining, and it will be better if the soil is a little rougher; in potting, the soil must be made firm, as Chrysanthemums cannot do well in a "loose root run." If it can be managed, keep the plants still under glass, preferably in a frame, chiefly in order to prevent the soil from becoming sodden by rain before the roots have had time to enter it freely. It is only a matter of a fortnight or so, but it will be worth it, as afterwards they can

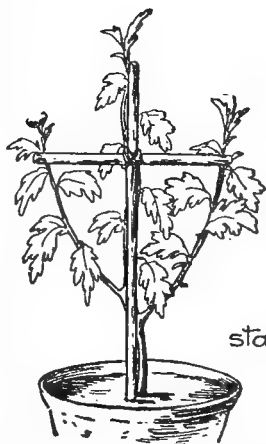
Shoots become too crowded & get insufficient
Light and Air if this method
of staking



is
adopted



this is the better way



Crossed Bamboo stakes
can also be used if
stakes are scarce, but not for
Exhibition Chrysanthemums.

withstand any weather that May brings without showing ill effects.

The Final Potting. The final potting cannot be fixed for any definite date, but after the middle of May, when the pots are fairly full of roots, it can be carried out. Flower pots 10 to 12 inches inside diameter at the top answer best, and the drainage should be ample—about 2 inches at least of broken crocks. The compost, of which turfy loam must form the bulk, should be pulled to pieces about the size of an egg, and to every 4 parts must be added 1 part of manure and wood ashes, with just sufficient crushed lime rubble to keep it porous. Make a heap of the potting compost and then “dust” it over lightly with bone-meal, soot and some proprietary fertilizer. Mix all well together and do not be afraid to use the rammer to make it firm in potting. A point to remember is the value of top-dressing, and to make this possible later on leave the surface soil about 2 inches below the rim of the pot.

The summer quarters should be right in the open, as shade of any kind is against the best results. Wind is liable to damage the plants by breaking off the shoots; any form of natural protection should be taken advantage of, and the extra precaution taken of securing the bamboo canes (used to support the plants) to strong wires attached to straining posts at each end of the row.

The first “stopping” has already been referred to; the second “stopping” is necessary when the shoots are about 6 inches long. This will result in the development of nine shoots or so, and no further “stopping” will be needed, as each shoot will branch out naturally early in

August and again about five weeks after, unless, of course, one requires the biggest possible blooms, in which case the second branching will not take place, as the buds will need “taking.” Each growth should be secured to a cane, and all of the canes should be fixed to slant outwards so that light and air can reach the centre and the plant is made to show to the best advantage.

Summer Treatment. After the end of June the roots will have got a good hold on the new soil and it will be necessary to examine the pots daily or even oftener for water, for while too frequent watering is to be avoided, the slightest root dryness is inimical. When watering, always fill the pot to the rim, never give drops. Feeding may safely commence at the end of July, weak liquid manure being given three times a week; soot water is also beneficial, and may be used alternately with liquid manure. It is a good plan, too, to make frequent use of a good proprietary fertilizer, using it according to the directions supplied with it. Top-dressing should be done gradually, commencing at the middle of August and finishing just before housing the plants at the end of September. Fill to within half an inch or so of the rim with rich, “fine” soil, and water through a “rose.”

Syringeing is highly beneficial in hot weather, especially in the evening; it is a good plan occasionally to syringe the plants with weak soot water.

Suitable Varieties. Amongst varieties well suited to this method of cultivation are Mrs. R. Luxford, reddish bronze; W. Turner, white; Tim Page, pink; Edith Cavell,

chestnut bronze ; Golden Glory, rich yellow ; H. W. Thorpe, white, incurved ; Rayonante, rose pink ; Golden Butterfly, yellow, a grand late variety ; Framfield Orange and Brilliant, crimson. Amongst singles there are Florrie King, pink ; Jessica, rich crimson and gold ; Mrs. R. C. Pulling, pink ; Winifred Parry, terra-cotta ; and White Beauty.

Border Chrysanthemums. This type of Chrysanthemum is valuable for planting in the herbaceous or mixed border of hardy flowers, for the plants provide a succession of bloom after such kinds as Sweet William, Columbine and others relied on for early summer bloom are over. They also fill flower beds attractively during late summer and autumn. If a bed is devoted solely to them there is the disadvantage that the plants are flowerless until August or September unless other plants are grown between them, such, for instance, as the *Primulinus Gladioli*, which begin to bloom in July ; or seeds of annuals may be sown. These methods, however, interfere with the proper cultivation of the Chrysanthemums, and in small gardens and those of moderate size it is best to have them in the hardy flower border. Those who have the room ought certainly to devote a reserve border to the out-of-doors Chrysanthemums for the sole purpose of providing a quantity of cut flowers, for none is of greater service during late summer and early autumn.

Preparing the Ground. This type of Chrysanthemum has to perfect its growth and produce its blossoms in a comparatively short period, and to enable it to do that satis-

factorily it is obvious that the ground must be so prepared that the progress of the plants will be uninterrupted once they are put out. This can be ensured only by digging deeply and by manuring the soil where the Chrysanthemums are to be grown. The ground should be dug to a depth of not less than 18 inches, and some decayed farmyard or stable manure may be mixed in the lower soil with great advantage, since it will promote vigorous growth and provide moisture just when it is chiefly needed—in the hot, dry weather.

The best manure of all to mix with the soil for these plants is the material from an old mushroom bed, and if the reader can obtain a load of that he will find that the results fully justify the expenditure. It is "short" and soon becomes thoroughly mixed with the soil, encouraging the plants to root freely and thus keeping them healthy and vigorous. If the ground can be dug in the winter or early spring, so much the better, but at any rate this work ought to be attended to several weeks in advance of planting. This will allow of the soil being thoroughly broken down and made friable before the plants are put out, thus giving them every chance to make a successful start, which is half the battle.

Winter Treatment. If there is any doubt concerning their resistance to the cold and wet of winter, those varieties it is wished to preserve and to increase should be lifted in November and planted in a garden frame in which a bed of soil has been made up ; or they can be potted in flower pots and placed in a greenhouse or frame. They will take up comparatively little room, for, of course, all the stems

may be cut right down when the plants are lifted.

No artificial heat is required, merely protection from severe cold and continued wet weather, and an unheated frame or greenhouse provides that. During the winter months the plants need very little water, but the soil must be moistened occasionally to prevent its becoming dust dry. In February or early March signs of fresh growth will be apparent, and the new shoots will be seen pushing through the soil. When these shoots are about 3 inches long they are in a suitable condition for use as cuttings to provide a fresh lot of plants.

Propagation by Cuttings. Border Chrysanthemums can be increased very easily and very quickly by means of cuttings; strong plants will produce numerous shoots suitable for this purpose, and with careful management almost every one will form roots, and in due course become a separate plant. If the shoots are carefully pulled out or are cut off well beneath the soil, some of them will be found to have a few roots already. Shoots that have no roots should be cut off beneath a joint, one or two of the lower leaves being removed, and then inserted in boxes or flower pots filled with sifted sandy soil. It is a simple matter to prepare a suitable compost for the cuttings. One has only to search here and there in the garden for patches of good soil, pass it through a $\frac{1}{4}$ -inch sieve, mix a little leaf-mould with it and give a good scattering of sand, and the thing is done. If there is a stack of good loamy soil at hand, some of that, when sifted, will make an even better compost;

but how often in amateurs' gardens is such a stack lacking?

The cuttings must be made firm in the soil and should be placed 2 to 3 inches apart, about 1 inch of the cutting being beneath the soil. It is an advantage to place the boxes or pots of cuttings in a propagating case or to cover them with a hand-light for a few weeks until they are rooted, but one may do without those accessories and still achieve success. If they are in a closed case the cuttings will form roots more quickly than when on the stage of the greenhouse, and there will probably be fewer losses; still, a very large percentage of them will form roots even if not covered. It is a good plan to cover the surface of the soil with sand before the cuttings are inserted, then, as the holes are made, the sand will fall to the bottom and thus facilitate the formation of roots. When the cuttings have been put in they should be watered with a can having a fine "rose" on the spout. They will then need very little more water until roots have formed, but they must be sprayed frequently through a fine syringe—this may be done once a day during bright weather, less often on dull days.

In three or four weeks the cuttings will possess a fair number of roots, and they must then be transplanted, either singly to small flower pots or at 6 inches apart in a bed of soil in a frame or in other boxes. The next move will be to their positions out of doors in April or early May. The little plants must be kept as cool as possible, the frame or greenhouse being ventilated freely in mild weather, and watering needs care. When the soil is fairly dry give sufficient water to moisten it thoroughly, then

give no more until the soil is again fairly dry.

Planting Out of Doors. If managed in this way the Chrysanthemums will be sturdy little plants by the middle or end of April, and about that time they may be planted out of doors. Whether the planting is delayed or advanced a week or so is not a matter of moment; it is wise to choose a time when the weather is mild and showery and when the soil works nicely—that is to say, when it is friable and can be pressed well round about the roots without becoming sticky. They should be placed about 18 inches apart, the soil being made firm round the roots.

Summer Management. During the summer months it is important to hoe the soil thoroughly and frequently, twice or three times a week, for the purpose of getting rid of weeds and promoting the growth of the plants. By this means a loose "mulch" of soil is maintained and the roots are not likely to suffer from lack of moisture during hot dry weather, the need for watering will be lessened and the Chrysanthemums will make rapid and uninterrupted progress. A watch must be kept for the appearance of aphid, a common pest that stunts the growth of the plants if not destroyed. Syringing with Abol or other proprietary insecticide, or with quassia chips or paraffin emulsion (half a pound of soft soap, a wineglassful of paraffin and 2 gallons of warm water—this must be kept well mixed), will keep down this pest. If the maggots of the leaf-miner attack the leaves and damage them by tunnelling between the surfaces, they should be killed by pressing the affected

parts between thumb and finger, or badly damaged leaves or portions of them may be cut off and burnt. Spraying the plants occasionally in early summer with insecticide helps to keep away the fly that lays the eggs which give rise to the maggots.

Staking the plants is an important detail, for if the shoots are allowed to become misshapen the blooms will be worthless for cutting and they will lose much of their attractiveness in the garden. Once the stems are allowed to become bent through lack of support the appearance of the plant is spoilt. Further, unless the shoots are properly supported, they are liable to be broken off during windy weather. Bamboo canes make good stakes, and they can be used from year to year for they last a long time if stored for the winter. When the plants are grown in separate beds to provide cut blooms, the simplest way of supporting them is to run a row of wires attached to strong stakes put in the ground at intervals. The stick to which the plant is tied should be fastened to the wire; it will provide firm support. When the Chrysanthemums are grown in the mixed flower border careful staking is essential. One stick may provide adequate support for the smaller plants, but for vigorous and fairly tall varieties more than one stick will probably be required. The raffia should first be tied round the stake, looped or crossed, and then tied loosely round the shoot. As the plants increase in size further tying will be required.

Two-year-old Plants Flower Freely. A word may be said concerning second-year plants. In my own garden, of which the soil is heavy and becomes very wet in

winter, some of the out-of-door Chrysanthemums live during the winter though many of them do not. Those that do survive make splendid plants the following summer, forming large clumps and yielding sheaves of blooms. Two-year-old plants make a glorious display in the garden, though the flowers are not so large as those from first-year plants. I recommend that a number of plants be left undisturbed every autumn, for if they do chance to come through the bad weather safely, they will be greatly admired the next season when in flower. Numerous shoots will develop at the base of the old plants, and it is advisable to reduce them in number somewhat, otherwise the stems will be too crowded. After the second year the plants become very woody and do not grow so freely; it is therefore wise to renew them from cuttings after the second year. It is a good plan to place a covering of old sifted ashes over the plants that are left out of doors for the winter, and to renew the covering in spring for the purpose of preventing damage by slugs.

Border Chrysanthemums that have been planted in the garden for the summer may, if necessary, be lifted in September, placed in flower pots and brought into the greenhouse or conservatory where they will bloom. If the work is done correctly and with care the transplantation will do the plants no harm, and the grower will be rewarded with an excellent show of bloom under glass where the flowers will develop perfectly, safe from damage by wind and weather.

The following lists describe some of the best late summer and autumn Border Chrysanthemums :

Flowering in August. *Alex McAlpine, orange ; *Australian Gold, golden buff ; Betty, mauve pink ; *Charlotte Harley, scarlet crimson ; Crimson Diana ; Diana, bronze red ; Emily, pure white ; Ethel, primrose ; Golden Diana, golden yellow ; Knaresboro' Yellow ; Leslie, buttercup yellow ; *Lichfield Early White.

Flowering in September. *Abercorn Beauty, bronze red ; Betty Spark, rosy pink ; Bronze Goacher ; Bronze Normandie ; Chocolate Soldier ; Carrie, deep yellow ; Dick Barnes, crimson ; Dolores, terra cotta ; *Elsenham White, a fine variety ; *Elizabeth Gilleland, salmon cerise ; Esperance, creamy white ; *Framfield Early White ; *Framfield Early Yellow ; Goacher's Pink ; Goldfinder, a fine colour ; Harvester, yellow and orange ; Harvest Home, red tipped with gold ; *Hector, mauve pink ; *Holmes' White ; Horace Martin, yellow ; James Bannister, lemon yellow ; James Bateman, pink ; *Lichfield Pink ; *Lichfield Purple ; Market White ; Mary Mason, claret pink ; Minnie Carpenter, terra cotta ; Mme. Marie Masse, lilac mauve ; Mrs. R. J. Fielding, chestnut ; Mrs. Jack Pearson, bronze ; Normandie, blush pink.

Flowering in October. *Almirante, terra cotta ; *Armored, bronze ; *Bronze Delight ; Champagne, crimson carmine ; Hector, mauve pink ; Le Pactole, bronze ; Mrs. Marshall Field, pink ; October Gold, old gold ; O. J. Quintus, lilac pink ; Red Emperor, deep red ; R. Pemberton, rosy pink ; Ryecroft Glory, yellow and bronze ; Satin Rose, rose pink.

*Those marked with an asterisk are suitable for disbudding.

CHAPTER 53

Succulent Plants

THE term "succulent plants" includes Cactus, Phyllocactus, Aloe, Echeveria, Crassula, Mesembryanthemum, and others, all of which are distinguished by thick, fleshy, or succulent leaves or stems; they are natives chiefly of hot, desert regions, and this characteristic feature enables them to resist prolonged drought. Under cultivation their chief requirements are a sunny, dry, airy greenhouse, and unusual care on the part of the grower in giving water. The pots must be well drained, and the best compost for potting consists of loam (turfy soil) with which sand and broken brick or mortar rubble are mixed freely.

Many of them thrive in comparatively small pots; they need little attention, and do not suffer to the same extent as ordinary plants if allowed to get dry at the root. Thus they are especially adapted to the needs of amateurs whose work necessitates their being away from home during the day. In winter very little water must be given; in fact, the soil should be moistened only when it is really dry. In spring and summer more, of course, is required, and at that season the soil must be kept moderately moist, though even then water ought not to be given until the soil is fairly dry; thus a saturated compost,

which is, above all things, to be guarded against, will be avoided. When repotting is necessary the best time to carry it out is in spring, in March or April. The succulents most suitable for the amateur's greenhouse are the following:

Aloe. Some of these grow into large plants, needing a big glass-house for their accommodation, while others are of dwarf stature. Among the latter none is more popular than the Variegated or Partridge-breasted Aloe (variegata), which has beautifully mottled leaves and a spike of reddish flowers. It may be placed out of doors in summer, but must be brought into the greenhouse in autumn, and, like other succulents, needs a winter temperature of 45 to 50 degrees. Excellent specimens of this Aloe are often grown in sunny windows.

Cereus. Among the numerous kinds of Cereus, probably the most remarkable are the night-flowering Cacti, which open their large, fragrant blossoms late in the evening or at night. *Cereus grandiflorus* is the chief favourite among the night-flowering kinds; it bears immense flowers, white, and most fragrant. *Cereus flagelliformis* is the curious Rat-tail Cactus, a popular plant for baskets; it has long, tail-like, drooping stems, and

bears pink blooms. *Cereus speciosissimus* and its named varieties are largely grown, and when in bloom are very showy. There is no difficulty in their cultivation if the general hints given above are followed.

Crassula. The old scarlet-flowered *Crassula* (or *Kalosanthes*) *coccinea* is rarely grown by amateurs, but it is of sufficient merit to mention. Its bright scarlet blooms are produced in early summer, in flattish heads, on leafy stems some 18 inches or more high. A suitable compost is good loam with which sand is mixed. Propagation is by cuttings taken in spring, and the plants may be grown in a frame throughout summer.

Epiphyllum. *Epiphyllum truncatum*, which blooms in winter, needing a temperature of 50 to 55 degrees, is an old and showy plant. It, in common with other kinds, has flattened stems, and is of pendent growth, and therefore suitable for growing in baskets or suspended flower pots.

Kalanchoe. *Kalanchoe flammula* is a plant of comparatively recent introduction, and when first exhibited was greatly admired. It has somewhat rounded, fleshy leaves, and in summer produces flattish bunches of orange red blooms on stems some 20 inches high. If potted in loamy, sandy soil, grown in a frame in summer and brought

into a greenhouse temperature of 50 to 55 degrees in winter, the *Kalanchoe* offers few difficulties. Propagation is by cuttings taken in early summer.

Mesembryanthemum. The Fig Marigolds, to use the popular name, are very numerous. Some of those suitable for the small greenhouse are : *aureum*, yellow ; *coccineum*, scarlet ; *edule*, yellow ; and *violaceum*, violet. They are of low growth, and bear brilliant flowers in summer. Such treatment as has been outlined suits them ; especial care should be taken when watering in winter.

Phyllocactus. This is the most useful group of succulent plants for the amateur's greenhouse. *Phyllocacti* bear brilliantly coloured flowers and are altogether easy to grow if provided with a sunny position under glass or in a window and a dry, airy atmosphere. There are innumerable varieties of *Phyllocacti* obtainable from florists ; for example, *J. T. Peacock*, rose pink ; *Cooperi*, cream ; *Epirus*, pink ; *Orion*, bright red. The chief points of importance are, in summer, to keep the soil moderately moist and expose the plants fully to air and sunshine, and in winter to keep the soil fairly dry and maintain a temperature of 45 to 50 degrees.

Other kinds of succulents that the amateur will find of interest are the curiously formed *Mammillaria*, *Opuntia*, and *Echinocactus*.

CHAPTER 54

Pansies and Violas

PANSY and Viola are similar in their cultural requirements. Deeply dug, well-manured soil will suit them, and a cool but not damp position is the best situation. Heavy clay soil should be lightened by the addition of sand, and a handful of potting compost round the roots when planting is beneficial.

Although Pansies and Violas are perennials, in some gardens the best results are obtained by raising new plants annually from seeds or cuttings. June is the best time to sow seeds, and cuttings should be taken in July or August.

Sowing Seeds. It pays to buy a good strain of seeds, for these give the largest and finest coloured flowers. The seeds may be sown in pans or boxes of light compost, placing each seed about $\frac{1}{4}$ inch below the surface and just covering it with finely-sifted, sandy compost. Keep them moderately moist until germination takes place, and when the seedlings are large enough prick them out on a reserve border, placing them 6 inches apart.

The seedlings may be lifted with a ball of soil, even if in bloom, and will suffer no check when planted in their new quarters. In northern districts the seedlings will not have made sufficient development by autumn for this purpose, and should be wintered in a cold frame.

At the beginning of April they may be planted in their permanent places.

Sowings made in July and onwards require different treatment. When large enough to handle, transplant the seedlings 2 inches apart in other boxes of light compost, water liberally, and shade from strong sun. The boxes of plants may remain in the open until the approach of frosty weather, when they should be placed in a cold frame for the winter.

Taking Cuttings. Cuttings of vigorous growths from the centre of the plant root easily in boxes of sandy soil placed in a shaded cold frame. Shoots 2 to 3 inches in length are cut off just below a leaf-joint, the lower leaves being removed, and dibbled in the boxes of soil at 2 inches apart. The soil must be made firm. A little silver sand dropped in the holes before inserting the cuttings assists them to strike.

Fine Strains of Pansies. The flowers of the giant-flowered strain of Pansy are of unusual substance, and the colourings are varied and intense. The Masterpiece variety is distinct from the giant strains, the borders of the flower petals being undulated and curled much in the same manner as the standards of a waved Sweet Pea. The blooms are

large and of many brilliant shades of colour.

The Trimardeau Giant Pansy produces immense flowers under good cultivation. The bronze shades provide something uncommon in the way of colour, as do the orchid-flowered varieties.

Beautiful Bedding Violas. When planting, in April, a small quantity of well-rotted manure or leaf-mould should be placed beneath each plant. This will encourage the formation of new roots and help the plants to become quickly established. Allow plenty of space between the plants for future development. Violas for bedding, if grown in rich soil, make large plants before the end of the season.

Violas make an effective display when massed in separate colours, and they are also very attractive as edgings to paths or borders. The following are all reliable varieties :

Archie Grant Improved (it is called Edina in Scotland) is deep indigo blue, and Arkwright's Ruby, a beautiful shade of ruby, makes a lovely patch of colour. Bridal Morn, deep lavender blue, is a strong grower and very free-flowering.

Fred Williams, deep mauve, is vigorous and free-flowering ; James Pilling is a white ground variety, edged and suffused with lavender ; John Quarton is a good light lavender ; Maggie Mott, the well-known light mauve self, is a strong grower ; and Moseley Perfection, a large-flowered deep yellow, is of robust growth. Primrose Dame is a lovely primrose self ; Swan is the best white self, with distinct orange yellow eye ; Sweet Lavender is free-flowering ; and W. H. Woodgate, pale blue, is a beautiful flower when well grown.

CHAPTER 55

Planting Fruit Trees

THE planting of fruit trees can be carried out at any time from October until March, provided that the ground is not too wet, and is not rendered unworkable by frost and snow. Early planting has several advantages: in the first place, the soil is more or less warm, consequently the trees are inclined to commence root action as soon as planted. They become well settled in the soil before spring, and make better growth the first season than those planted after the turn of the year. It is important to have the ground in readiness to receive the young trees directly they arrive from the nursery, so that they are not kept out of the ground longer than is necessary. If any of them are at all dry at the root when they come to hand, soak them in clear tepid water before planting. If they are allowed to remain in a dry condition the wood will shrivel, and such a state of affairs is a serious check to the satisfactory progress of the trees.

The Best Soil. Fruit trees succeed best in a deep, loamy ground, and this ought to be cultivated to a depth of quite 2 feet before planting takes place; if it is dug deeper, so much the better. When the land has been under cultivation for some years, and has been regularly enriched with manures, it is not

desirable to add manure at planting time, as such treatment would encourage the trees to grow with undue vigour. It is a better plan to feed the trees when they are bearing full crops of fruits. In the case of land that is being freshly broken up for planting, however, the addition of some well-decayed farmyard manure is beneficial. This should be incorporated with the lower soil, and should not be allowed to come in contact with the roots. Lime rubble ought to be mixed in the soil where stone fruits are to be planted.

Needless to say, planting should be done when the soil is in a fairly dry and friable condition, and it is important to avoid doing the work in wet weather, for when the ground is sticky it cannot be trodden down firmly around the roots.

Distance between the Trees. The distance apart at which to plant the trees is an important matter. Bush and pyramid Apples and Pears should have a space of quite 12 feet left between them in the rows, and when they are grown in large blocks leave rather more space between the rows. It is not too much to allow standard trees a distance of 30 feet each way. Until they develop large heads the space between can be planted with bush fruits and vegetable crops. Cordon

Apples and Pears succeed admirably at a distance of 2 feet apart, while fan-trained specimens of Pears, Plums, Cherries, Apricots, or Peaches should be 15 feet apart. It is essential to take out wide holes when planting, so that the roots can be spread out fully, but they do not require to be deep. As a general rule the earth mark on the stem, in the case of young trees, will indicate the depth at which they should be planted. All that is necessary is to cover the roots effectively; deep planting often causes the trees to make rank growth, which is the chief cause of unfruitfulness. Do not make the middle of the hole lower than the sides, but keep it as level as possible.

Staking for Support. After the tree has been placed in position, drive in the stake, if support is needed, before the soil is filled in, so that it can be placed between the roots to avoid injury to any of them. Tie with tar twine, and place a piece of old cloth around the stem of the tree to prevent the string cutting into the bark. See that the roots are spread out carefully to their full extent, and if the ends of any of them are damaged, trim them off with a sharp knife. Fill in with some of the finest soil around the roots and tread it down firmly, afterwards leaving all level and tidy on the surface. If a mulch of short stable manure is given it will protect the roots in case of severe frost during the winter.

Concerning Orchard Trees. When large permanent orchards are required standard trees will be found the best. Whether the land was under cultivation previously or not is not an important matter, as it would require to be deeply broken

up in any case. The point is its subsequent treatment after planting. If the ground is to be cropped with garden produce for a time, all well and good; but if it is to be laid down with grass, do not neglect to cultivate the soil for a space of at least 4 feet from the stems of the trees. Under such conditions it is an easy matter to keep the weeds hoed off when necessary, and the trees will be found to make free and healthy growth. On the other hand, if the grass is allowed to grow up to the tree stems, growth will be far less vigorous and satisfactory. This is an important matter, and deserves the attention of all who wish to make their orchard a success.

Suitable Trees to Buy. Trees to be purchased should always be of the best possible value. Two-year or three-year-old trees are perhaps the best with which to begin. Those of the former age have been cut back once in pruning, and have had two seasons' growth from budding or grafting. Choose young trees which have stout but firm young shoots upon them, but do not think that mere vigour is best. Trees may have very strong growths, and at the same time these, owing to their unripened character, may be of little value, and when pruned back fail to grow satisfactorily. When making purchases it should be mentioned to the vendor for what purposes the trees are required. It is not much use, for example, to buy fan-trained trees for planting in the open.

Of course, it is quite possible to buy maiden trees and grow and train them for whatever purpose is required.

Forms of Fruit Trees. There are

many forms of fruit trees, and the amateur who is not conversant with them may well be excused if sometimes he is bewildered.

Standard. Everyone knows and recognises a standard tree, of which the branches are at the top of a stem of greater or less height. A half-standard is one in which the stem is considerably less tall than the full standard; it is to be commended for small gardens. Apples, Pears, Plums, and Cherries chiefly are grown as standards and half-standards.

Bush and Pyramid. The commonest forms of fruit tree are the bush and pyramid. The bush has no pronounced central stem, the branches arise from towards the base, and the centre is therefore more or less open. The pyramid, on the other hand, has a distinct central stem, and the branches arise from it at intervals throughout its full length. As the stem increases in height so, too, are more branches formed. The Apple is commonly grown as a bush; Pear is supplied as a pyramid, and the Plum either as a pyramid or bush.

Cordon. A cordon tree is suitable for planting against a wall, espalier, or trellis. There are single cordons having only one stem, double cordons having two stems, and treble cordons having three stems. Further, there are upright and oblique cordons. In the former the branches are upright; in the latter they are slanting. There are also

horizontal cordons, in which the branches are trained in a horizontal direction; these are very useful for planting alongside the garden walks. The horizontal cordon may be single, having one branch only, or it may be double, in which case it possesses two branches, one on each side of the short stem. Apples and Pears, together with Gooseberries and Red and White Currants, are most commonly grown as cordons. Apples only are, as a rule, grown in the form of horizontal cordon.

Espalier. The chief forms of fruit trees grown on walls, in addition to cordons, are horizontal espaliers, in which the branches are in successive horizontal tiers, each tier about 18 inches above the other; and fan shaped, in which the branches radiate from the centre and base of the tree. Pear, Plum, and Apple may be obtained as horizontal espaliers, while Cherry, Plum, Pear, Peach, and Nectarine are commonly grown as fan-shaped trees.

An economical method of planting a wall with fruit trees is to arrange tall-stemmed standards between fan-trained trees. Thus the former will furnish the upper part of the wall, while the latter fill the lower part. As, in due course, the fan-trained trees increase in height, the standards are removed to make room for them. The standards must therefore be planted with the view of utilising the upper wall space until the lower trees shall need it.

CHAPTER 56

Fruit Trees and How to Grow Them

APPLE. The best form of tree for the amateur to plant is the bush tree on the Paradise Stock; they should be planted 12 feet apart each way. Standard Apples are budded on the Crab Stock, and should be planted 30 feet apart for a permanent orchard. When this is done the space between may be filled with dwarf trees or bush fruits until the standards attain a large size. Bush Apples will be found more satisfactory for small gardens, for they commence to bear fruit when young.

Apples also succeed as espaliers, which may be planted along the side of walks, and as cordons. In cold districts choice dessert varieties succeed admirably as cordons when planted against a south or west wall; they then produce fine fruit of good colour and flavour.

In the cultivation of fruit trees on meadow land it is important to keep the ground clear of grass round about the stems; for a distance of 3 or 4 feet from the stem the soil should be kept hoed and free from weeds. Grass has a retarding influence on growth; if it is allowed to grow on the soil near the trees, these develop very slowly and take a long time to make large heads.

The best time to plant is in November, but this work may be done between then and the end of

March, provided that the weather is mild and the ground free from excessive wet, frost, and snow. It is far preferable, however, to get the work done early in autumn, for the trees then become well settled in the soil before the season of growth starts.

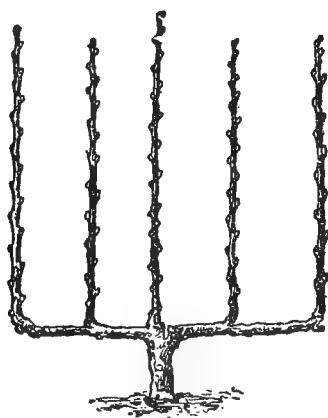
After two or three years' hard pruning to form a good foundation of branches, standards will not need to be cut back so much; in fact, a judicious thinning of the branches, removing any that would cause overcrowding and those that cross over one another, is all that is necessary. An occasional branch may require to be shortened a little to maintain uniform development and to ensure a shapely tree.

In the case of bush trees the main growths are shortened, and the side shoots are pruned back to three buds from their base to encourage the formation of fruiting spurs. The procedure is the same every year until the space at disposal is filled. At that time it is well to leave a shoot about 18 inches below the end of each branch when summer pruning, and in winter cut back to this. By this means young shoots are kept in the trees, and an accumulation of spurs at the ends of the branches, brought about by constant and hard cutting back, is avoided.

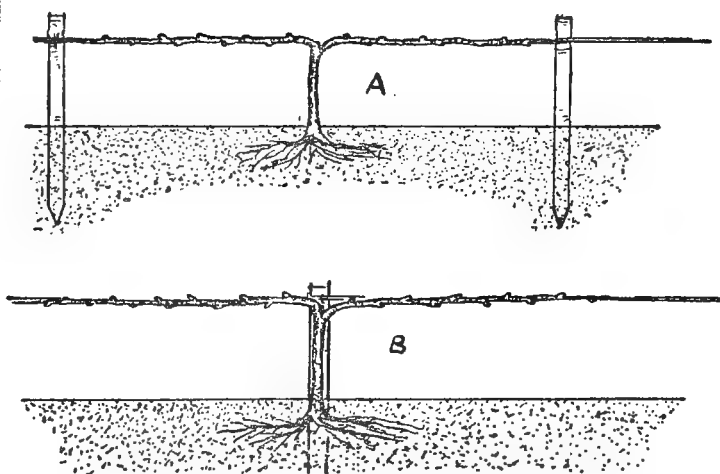
The pruning of cordons and espaliers is not difficult; the leading growths are cut back to about 12 inches in length each year until the space at disposal is filled, and

the side growths are pruned to three buds from the base to encourage fruit-spurs.

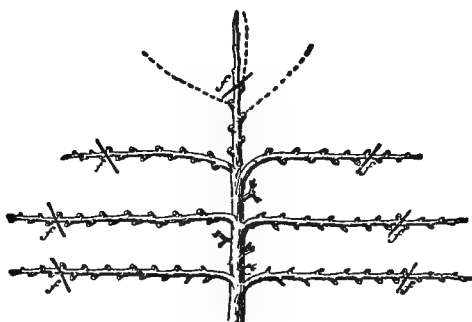
The summer pruning of Apples deserves careful attention, as it



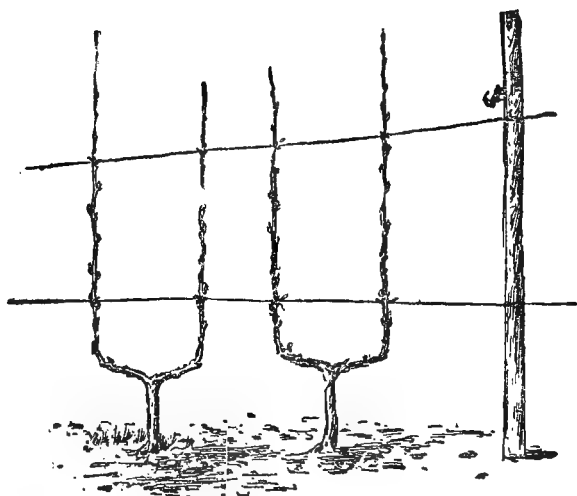
Red Currant trained as an espalier



Horizontal Cordon Fruit Trees. Correct planting and staking (A) and incorrect (B) are shown



Branches of horizontal Espalier of Pear Tree ; the branches are pruned at (f) in winter



Double Cordon Fruit Trees on Wire Support

helps the fruit by admitting sun and light, and assists the development of fruit-buds and the ripening of the shoots. Summer pruning should not be done too early, or secondary growths will form, and this is not

desirable. The ideal time is during late July and early August, but in late seasons vigorous trees might be left for another week or so with advantage. At this pruning the side growths are cut back to five leaves



Typical Summer Shoots of Pear Tree



Summer Growths after being shortened

from the base, and the leading growths are just shortened a little.

When Apple trees are heavily laden the fruits should be thinned in June. A crop of large Apples is

then obtained, but if the fruits are left in clusters many of them will remain small and be of little value for home use or for market purposes. Such trees derive much

benefit if thoroughly watered with liquid manure, and the fruits will be improved. If a mulch of short manure is given it helps to conserve moisture in the soil ; freshly planted

trees should be mulched after planting or in spring.

Spraying in February is a preventive against insect pests. Many old orchards in which the trees are



If Side Shoots subsequently form, they, too, must be "stopped"



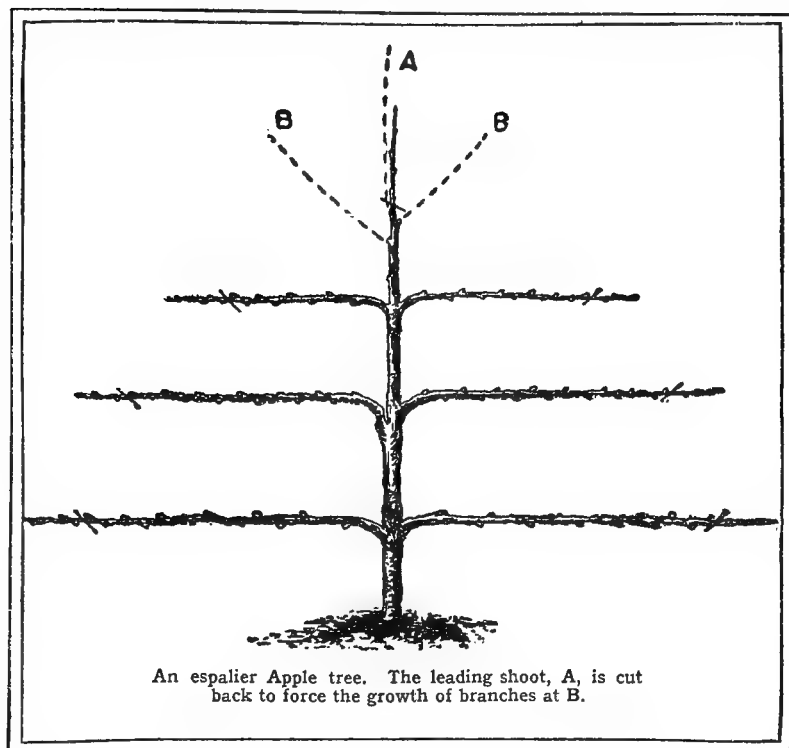
Wrong Way of Summer Pruning. The shoots have been cut too severely



Showing how the Buds at the base of the Shoot start into growth if Summer Pruning is too severe



How the Shoots are Pruned in Winter



covered with moss and lichen would derive much benefit from such treatment, and if the work was repeated once in three years the trees would be kept in a far more healthy and productive condition. Tar oil winter wash is recommended for use in this case, and if carefully applied so as to reach all parts of the trees it will kill the moss and lichen and destroy insect eggs.

The Best Varieties of Apple. Dessert Apples, arranged in their approximate order of ripening: Langley Pippin, Worcester Pearmain, Beauty of Bath, St. Everard, James Grieve, Egremont Russet, Ellison's Orange, Allington Pippin, Lord Lambourne, King of the

Pippins, Cox's Orange Pippin, Laxton's Superb, Adam's Pearmain. Cooking Apples, arranged in their approximate order of ripening: Early Victoria, Lord Grosvenor, Rev. W. Wilks, Stirling Castle, Grenadier, Lane's Prince Albert, Bramley's Seedling, Crawley Beauty, and Newton Wonder.

Cherry. Few fruits are more appreciated than Cherries, and they can be grown successfully in small gardens, as they lend themselves to various methods of training. Cherries prefer loamy soil that is naturally well drained; land that is fairly rich in lime is suitable.

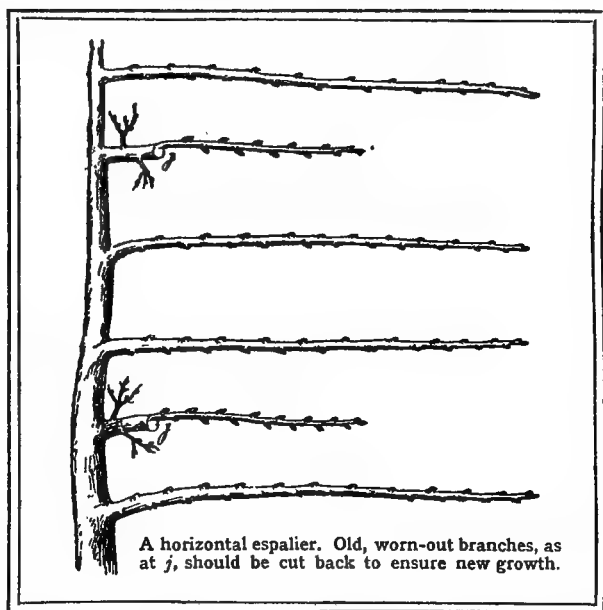
Bush-trained Cherries are suitable for small gardens; this fruit may

also be grown as a standard and espalier. One advantage of the latter type of tree is that it can be grown by the side of a walk and takes up very little space. Probably the best fruits of dessert varieties are grown on walls, and the trees succeed on almost any aspect. In favourable localities those on north and east walls are a great success.

Morello Cherries are grown on a north wall, and a better tree for the

to rise gradually upwards; but do not have a central stem. If the trees possess one cut it out, the centre will fill up in a year or two.

Pruning. The pruning of established trees is best done early in winter, as the buds are not then so likely to be injured and gumming will be less probable. In the case of sweet Cherries shorten back the leading growths by one-third of their length, and prune the side



position cannot be found. Fan-trained trees are the best for walls, and may be planted from 15 to 20 feet apart. Early autumn planting is to be preferred, and the trees should be pruned the following February. Cut back the growths fairly hard the first year, taking care to cut to a plump wood bud on the upper side of the branch. Train the lower branches out horizontally on each side, and allow the others

growths to three or four buds from the base of each. Morello Cherries are treated differently, as they bear fruit on the growths made the previous season; consequently it is essential to keep the trees furnished with such growths. They should be trained at 6 inches apart all over the tree; superfluous shoots and worn-out branches should be cut right out at their base.

Standard trees of both Morello

and sweet Cherries are best cut back fairly hard for two or three years ; subsequently, when well-formed heads have been developed, little pruning is required beyond a judicious annual thinning of the branches. Young trees that grow with undue vigour should be carefully root-pruned in the autumn.

The summer pruning of sweet Cherries is done early in July. In the case of trees on walls and bushes in the open, cut back the side growths to five leaves from their base, and just shorten the leading shoots a little. Black fly frequently attacks Cherries, and the trees should be syringed with quassia extract in May to check this pest. It is often necessary to repeat the spraying to ensure the foliage remaining clean and healthy. Do this in the evening after the sun is off the trees, and syringe them well with clear water the next morning.

Trees bearing full crops need to be frequently watered in hot weather, especially those growing against walls, and in most gardens it is necessary to net them when the fruit is ripe for protection against birds.

Morello Cherries are chiefly used for cooking purposes ; they usually crop very freely, and are ready for use from August until October.

Good varieties are Early Rivers, Elton, Governor Wood, May Duke, Black Tartarian, and Bigarreau Napoleon.

Red and White Currants. Red and White Currants need similar treatment, so they may be considered together. They are usually grown as bushes in an open part of the garden, or as cordons trained against a wall facing north or east, or against a trellis in the open.

These Currants are especially useful as cordons, and in this form are strongly to be recommended to the amateur. They are convenient to attend to and bear fruit freely. Red and White Currants thrive in ordinary soil ; bushes should be planted 5 or 6 feet apart. October and November are the best months for planting.

When they are grown as cordons it is advisable to practise summer pruning, which consists in pinching off the ends of the side shoots in July, at about 5 inches from the base. Winter pruning is performed by cutting back the side shoots to within one or two buds of the base. When the Currants are grown as bushes summer pruning is rarely practised, but it is nevertheless advisable.

Birds often play havoc with the fruits, and the only way to prevent their attacks is to net the bushes. Obviously it is far more convenient to protect a row of cordons than a plot of bushes, and this is an additional recommendation for growing the Currants in that form.

Good varieties of Red Currants are Laxton's Perfection, Raby Castle, and Fay's Prolific. White Currants to be recommended are White Dutch and White Transparent.

Black Currant. This is an accommodating bush, and will thrive in a somewhat partially shaded situation if no better can be found for it. Nevertheless, providing the ground is deep and loamy, the Black Currant may be grown to perfection in the open. In light soil and a sunny spot it is liable to suffer from drought, and is then unsatisfactory.

The pruning of the Black Currant is different from that needed by

the Red and White Currants ; the branches must not be cut back to form spurs. The finest fruits are produced by the shoots of the previous year's growth, and pruning should be directed to cutting out the old stems to make room for the fresh ones, the tips only of the latter being cut off. Many amateurs scarcely ever prune their Black Currant bushes, with the result that growth becomes weakly and the bushes get crowded with useless shoots ; the crop of fruit then is meagre and the fruits are small.

One of the finest varieties of Black Currant is Boskoop Giant ; other good ones are Naples, Seabrook's Black, Mammoth, Baldwin's, Mite Free, and September Black.

Fig. To be successful in the cultivation of Figs it is necessary to keep the trees furnished with sturdy short-jointed growths, and this can only be done by growing them in a border where the roots are restricted. If Fig trees are allowed an unlimited root-run they will make growth freely, but fail to produce a crop of Figs. This refers to trees under glass and in the open.

Supposing the trees are grown against a wall, which is the usual practice, a border 4 feet wide and 2 feet deep is sufficient in size for them. It should be enclosed at the bottom and front by stone slabs fixed in cement or concrete to keep the roots confined to that space. Over the stone place a layer of brickbats covering the entire bottom, and on these put old turves grass-side downwards. The bulk of the border should be made up of loam, old mortar rubble and coarse charcoal being mixed with it. If the compost is made firm and trod-

den well round the roots at planting-time, the trees will make sturdy growth, which is so essential to success.

Planting may be done in November or at the end of March, but in cold districts it is advisable to protect the tree in winter by thatching with straw or covering with sacking, which may be removed late in March or early in April.

Pruning. Well-developed young trees will not need pruning the first year, and all that is necessary for some time is to remove those growths that would cause overcrowding. Old trees often present more difficulties, especially if they have been neglected. The object is to keep all parts of the trees furnished with young fruit-bearing shoots, and such should be trained in about 6 inches apart, certainly not closer. When pruning, which should be done early in April, cut away as many old shoots—those that have fruited—as can be replaced by young growths. Always allow a certain number of young shoots to develop from the base of the tree. When growth has commenced, remove any young shoots that are seen to be superfluous and are not wanted for the furnishing of the trees, and later on fasten the remaining growths to the wall or trellis. As a general rule it is not necessary to "stop" the growths of outdoor Figs during summer, but when the trees are very rank in growth it is wise to pinch out the points when the shoots are 15 inches in length.

It should be understood that the growths must not be shortened at the winter pruning, but laid in full length ; those that are removed should be cut out close to the

branch from which they grow. Outdoor Figs ought to be grown against a south or west wall. Brown Turkey is the most satisfactory variety.

Gooseberry. The Gooseberry is a favourite fruit with amateurs, and not without good reason, for as a rule it crops freely, is easily managed, and the fruits are useful both in a green state and when ripe. The bushes thrive in ordinary soil that has been deeply dug and with which some yard manure is mixed. November is the time to plant; the bushes ought to be at least 5 feet apart. Deep planting should be avoided; if the uppermost roots are covered with about 2 inches of soil that is sufficient. It is necessary to make the soil thoroughly firm about the roots.

The Gooseberry bears fruit both on spurs and on shoots of the previous year's growth. Spurs are short, stunted growths that develop when side shoots are pruned to within one or two buds of the stems each winter. Some growers prune all the side shoots of the Gooseberry in this fashion, but it is a mistake to do so. Whenever there is room, some of the best shoots of the previous year's growth ought to be left two-thirds or three-quarters of their full length. They will, as a rule, bear fruit freely, and, moreover, the fruit so obtained is of fine quality. The branches must be kept well apart from each other—at such a distance that the hand may be passed through them conveniently.

It is usual to defer the pruning of Gooseberries until early February, owing to the damage done to the buds by birds. Useful protection is afforded during winter by tying the branches together with stout string,

making bundles of them into which the birds cannot penetrate. Sprinkling slaked lime and soot on the branches while they are moist also helps to keep away the birds, while some gardeners stretch black cotton between the branches.

Cordon Gooseberries. Gooseberries are admirably adapted for cultivation as cordons, and in this form may be trained against a wall facing east or north, or planted against a trellis in the open. They are easily attended to, pruning is simple, and the fruits can be netted and gathered without difficulty. Summer pruning can then be practised with ease. This consists in pinching off the ends of the side shoots when they are about 5 inches long. At the winter pruning the shortened shoots are still further pruned to within one or two buds of the base, as in pruning the bushes. I am sure amateurs would find this a most profitable way of growing Gooseberries, and a large number of plants can be accommodated in a small space.

Good Varieties. There are innumerable varieties of Gooseberries of different colours to select from, and both small and large-fruited sorts. The following form a selection of the best sorts having small fruits. Red: Ironmonger, Keen's Seedling, Red Champagne, and Warrington. Yellow: Champagne Yellow, Yellow Sulphur, and Golden Gem. Green: Greengage, Green Gascoigne, and Langley Gage. White: Whitesmith. Large-fruited sorts—Red: Crown Bob, Dan's Mistake, Lancashire Lad, Speedwell, and Whinham's Industry. Yellow: Keepsake, Langley Beauty, Gunner, and Leveller. Green: British Queen and Plunder.

White : Antagonist, Careless, Shiner, and Transparent.

Loganberry and other Berried Fruits. During recent years the Loganberry has become very popular, and has been widely planted. This is scarcely to be wondered at, for it is particularly easy to grow and invariably bears a good crop of large berries. Though some people like them as dessert fruits, most of us prefer them when cooked or made into jam.

The Laxtonberry is the result of a cross between the Loganberry and Superlative Raspberry, and the fruits may be pulled off as clean as those of the Raspberry. Other modern berried fruits are the Lowberry, Newberry, King's Acre Berry, Veitchberry, and Hailshamberry.

Then there is the Parsley-leaved Blackberry, a splendid kind which bears regularly a heavy crop of large Blackberries of excellent flavour. Even the common Blackberry is worth growing in the garden, providing a good form of it is obtained. The fruits are much finer under cultivation than in the hedgerow.

All these fruits need similar treatment so far as their cultivation is concerned, and that is of the simplest. The best crop and the finest fruits are produced by one-year-old stems—that is to say, by those that developed during the previous summer. Pruning therefore takes the form of cutting out the old branches, those that have borne a crop of fruit, as soon as the fruit is gathered; the fresh stems of the current season's growth are tied in to take their places. Fresh growths are produced abundantly each summer, so freely, in fact, that it is

usually necessary to remove some of them. No other pruning is required, except that in spring it is advisable to shorten the fresh stems very slightly if they are weak or soft at the tips.

All these berried fruits thrive in ordinary soil.

Melon. Melons are among the most delicious and refreshing of summer fruits, and are appreciated by everyone in hot weather. Very good Melons can be grown in a frame, with but little trouble and at small expense, by anyone who will carry out the simple directions in this chapter.

A hotbed should be prepared in April, and should be composed of equal parts of strawy stable manure and leaves, preferably those of the oak. Mix well together and make up the hotbed in a position fully exposed to the sun; the frame is then placed on the top. The hotbed ought to be large enough to extend for 18 inches all round outside the frame; it should be quite 3 feet deep at the back and just over 2 feet deep in front.

Insert a thermometer in the hotbed, and when the temperature has declined to 90 degrees, sow the seeds separately in 3-inch pots and plunge the latter in the frame.

Raising the Seedlings. As soon as the young plants appear, syringe them lightly with tepid water in the morning and afternoon. At this early stage very little air is needed, and none should be admitted to the frame unless the temperature exceeds 80 degrees. In the meantime prepare the soil for the plants. This should consist of 3 parts of loam, chopped into pieces about the size of a pigeon's egg, and 1 part well-decayed manure. About two



The beautiful new Godetia named Sybil Sherwood : it is of salmon colouring. It blooms in summer from seeds sown out of doors in spring



St. Brigid Anemones are gorgeous flowers of crimson, scarlet, purple, rose, and other colours. The roots are planted in September for spring bloom, and in February for a summer show.

barrow loads to each framelight will suffice at first, and this should be placed in the form of a ridge in the centre, with just a little to cover the rest of the hotbed.

When the plants are well rooted in the small pots, plant them out on the mounds, two beneath each light. After growth has commenced and the plants are about 6 inches in length, pinch out the tips to encourage the formation of side shoots. These should be spread out and allowed to cover the surface of the frame. When roots appear on the top of the soil, give a light top-dressing of loam, and press it down firmly. Do not allow the plants to suffer for want of water at any time ; always use tepid water.

Superfluous side growths must be pinched out when quite small. If they are allowed to grow and a lot of shoots are cut away at one time, it causes a check and is liable to do much harm to the plants. When the fruits form pinch the growths at the first leaf beyond the fruits ; any further shoots that form should be removed. Always endeavour to set four blooms on a plant at the same time ; if this is not done the fruits grow unevenly, and the later ones usually fail to swell satisfactorily. The blooms are "set" by fertilising the female flowers with pollen from the male flowers, and this should be done at midday when the atmosphere is dry. At this period the morning syringeing ought to be discontinued, but when four fruits have been set on each plant continue to syringe twice daily.

Close the frame in the afternoon, early or late according to the weather, but so that the temperature will rise to 95 degrees.

When the Melons commence to ripen admit rather more air, and as they turn colour less water should be given. It is, however, important to keep the foliage fresh until the fruits are cut, otherwise the flavour of the Melons is not so good.

Melons can often be grown in a frame without a hotbed if strong plants are obtained to plant out early in June, and every advantage is taken to close the frame fairly early in the afternoon, so that the temperature rises by natural warmth. Late crops ought to be grown in a frame heated with hot-water pipes ; only in this way can the fruits be ripened properly.

Hero of Lockinge is one of the best Melons for a frame ; the fruits are of good size, round, well netted, and have white flesh. The Peer is a fine variety with pale green flesh, and is of delicious flavour. Blenheim Orange is a scarlet-fleshed variety that can be highly recommended.

Peach and Nectarine. Only those whose gardens are in fairly mild districts can hope to grow the Peach and Nectarine out of doors successfully, and even there this fruit needs the shelter of a wall facing either west or south. Ordinary loamy soil is suitable. Before planting takes place the border ought to be deeply dug, lime rubble or basic slag being freely dug in. If the soil is at all poor, half-decayed yard manure may be used also ; this, however, is not usually necessary. Young Peach trees generally grow too vigorously during the first few years after planting, and to make the soil rich is to aggravate the evil.

Planting is best done in October or early November ; the roots must be spread out as much as possible,

and the uppermost ones ought not to be covered with more than 2 inches of soil. It is wise to prepare the border a week or two before planting takes place, so that it may settle to its normal level. The soil must be made firm about the roots ; it is fatal to success to plant fruit trees in loose soil.

The pruning of the Peach and Nectarine is perfectly simple. The fruits are produced upon the shoots or branches that formed during the previous year. In pruning, the old branches—those that have already borne a crop of fruit—are cut out, and the fresh shoots—those that will yield the following year—are trained in to take their places. The best time for pruning is as soon as the fruits are gathered.

Training is a matter of importance. The best form of Peach and Nectarine tree is that known as fan shaped, in which the branches radiate from the centre and low down in the tree. A well-shaped tree is not obtained—or at least retained—without some care, but it may be ensured if another important task, that of disbudding, is attended to.

Disbudding consists of removing superfluous shoots in early summer. These arise upon the branches of the previous year's growth in such numbers that there is not room on the wall to accommodate them, and a large proportion must be removed. If the amateur realises that the young shoots allowed to remain will form the branches of next year, to replace those now bearing fruit, he will have an excellent idea of the way in which disbudding ought to be carried out. When the work is finished there should remain not more than two, or possibly three, fresh shoots on

each of the older ones. All the others must be rubbed off, though not on one occasion. Disbudding should be practised at intervals of a week or ten days, and is generally completed in about three weeks or a month. Care must be taken to leave a good shoot at the base of the old branch, or as near the base as possible, otherwise the lower part of the tree will get bare and unsightly. There must be another shoot at the top of the branch, and if there seems to be room for one more, another may be left towards the middle of the branch.

As the fresh shoots grow they must be loosely tied to the trellis, to nails in the wall, or to older branches, purely as a temporary measure to prevent their being broken in high winds and to keep them straight, until they can be nailed to the wall to replace those bearing fruit ; the latter will be cut out as soon as the crop is gathered.

A few of the best varieties for amateurs are : Stirling Castle, Royal George, and Violette Hâtive. Good Nectarines are Early Rivers, Elruge, Humboldt, and Pineapple.

Pear. The Pear as an orchard tree is long-lived, though if planted on the Pear Stock, as standard orchard trees are, many years pass before a full crop is obtained. For garden cultivation, in bush or pyramid form, the Pear ought to be on the Quince Stock. It then begins to bear fruit at an early age, and does not make such vigorous growth as trees on the Pear Stock do. This, then, is the form in which the Pear should be grown by amateurs with comparatively small gardens. The Pear thrives in ordinary ground, though with a preference for that which is rather light than clayey.

Although the Pear is most commonly grown in the open garden, it makes an excellent wall tree, and may be planted on a wall facing south, west, or east. It is perhaps not worth while to give up a south

As a trained tree the Pear is usually grown fan shape or as a horizontal espalier, in which the branches are in horizontal tiers some 18 inches from each other. In some old gardens the Pear has been



A pyramid Pear tree. The branches are pruned at e in winter.

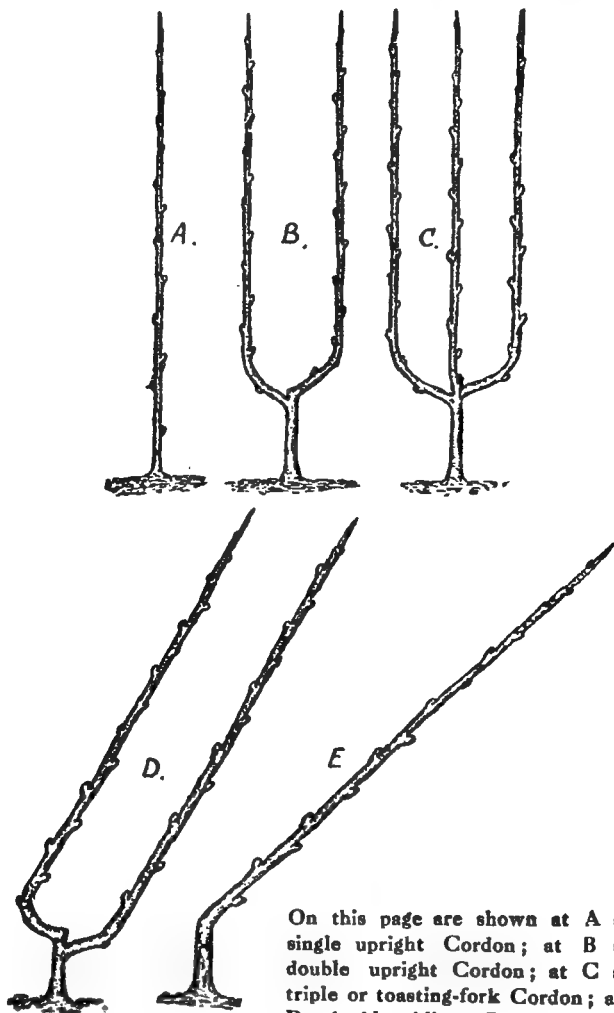
wall to the Pear, if Peaches and Nectarines are to be grown, but it may well find a place facing west or east. Even on a north wall the Pear does fairly well, and makes a good espalier in the open.

planted to cover a semicircular wire trellis, the trees being planted on each side and trained towards the top, where they meet. It thrives well in this way, and when the trellis is covered it is quite attrac-

tive. Moreover, the trees are easily attended to, for one can reach the top of the trellis from each side.

The Pear is suitable also for training as a cordon, and in this

form may be planted against a trellis or wall. Pyramid Pears in the open garden ought to be put about 9 feet apart; fan-trained or horizontal espaliers against a wall



On this page are shown at A a single upright Cordon; at B a double upright Cordon; at C a triple or 'toasting-fork' Cordon; at D a double oblique Cordon; at E a single oblique Cordon

should be 15 feet apart, while single cordons must be 18 inches apart; double and treble cordons at greater distances.

October and November are the best months for planting. If a group of trees is to be planted, it is a mistake to dig holes just where the trees are to be placed; it is far better to have the whole plot deeply dug. A little well-rotted manure may be mixed in towards the bottom of the holes, though this is not really necessary if the ground is fairly good. Basic slag is to be preferred; this may be scattered on the soil at the rate of 6 ounces to the square yard and then dug in. Bonemeal is also a valuable artificial fertiliser for the Pear and other fruit trees, and may be used in similar quantity at planting time or in spring as a top-dressing, to be forked beneath the soil. Firm planting is essential, the soil being well trodden about the roots. It is a mistake to plant deeply; if the uppermost roots are covered with about 2 inches of soil that will be sufficient.

Pruning. The pruning of the Pear tree is simple. The first thing of importance is to keep the branches thinly disposed; they ought to be quite 18 inches apart, and preferably rather more. Summer pruning is important in Pear cultivation. In July, when the side shoots are about 8 inches long, they should be cut off above the sixth leaf; the leading shoots—those that extend the branches—must not be touched. Other secondary shoots will probably form a few weeks after the side shoots have been pruned, and they ought to be “stopped” as soon as they have made one or two leaves.

There are so many varieties of

Pears that the amateur is likely, on consulting a catalogue, to experience difficulty in making a selection. One of the most satisfactory for amateurs is Conference; it is ripe in October, and rarely fails to bear a good crop. Other varieties to be recommended are: Beurré Hardy, October; Jargonelle, July, August; William's Bon Chrétien, September; Louise Bonne of Jersey, October; Beurré Superfin, October, November; Emile d'Heyst, October, November; and Josephine de Malines, December, January.

If a warm wall is devoted to Pears, the following varieties may worthily be chosen: Fondante d'Automne, September; Marguerite Marillat, October; Louise Bonne of Jersey, October; Beurré du Buisson, December, January; Beurré Superfin, October, November; Doyenné du Comice, November; Durondeau, October; Marie Louise, October, November; Winter Nelis, December to February.

Plum. The Plum is grown as an orchard tree in the form of a standard, and as a bush or pyramid in the garden. It is most useful also for planting against a wall facing west or east, and even on a north wall is fairly satisfactory. In preparing the ground for the Plum, which is best planted in autumn, lime rubble ought to be mixed in the soil freely; failing this, use basic slag at the rate of half a pound to the square yard. The ground should be prepared a few weeks in advance of planting, so that it may become moderately firm before the trees are put in.

Young Plum trees are liable to produce very vigorous growths during the first few years after being

planted; for this reason it is not advisable to mix any yard manure in the ground prepared for them. The soil ought to be made quite firm about the roots by means of treading; otherwise the tendency to make long and useless shoots will be aggravated.

Deep planting is to be avoided; the roots must be spread out well, and the uppermost ones should be covered with not more than 2 inches of soil. A mulch of yard manure on the soil above the roots in early summer is beneficial, because it keeps the ground moist.

A look-out ought to be kept for suckers—shoots that arise from the stock upon which the Plum is budded and spring up around the tree, sometimes at a considerable distance from it. They must be pulled up with as much root as possible. It is not sufficient to cut them off at the ground level; they will grow again in increased numbers.

Pruning. The pruning of the Plum needs to be carefully performed. The trees bear fruit from spurs—short stunted growths that arise on the main branches—and they also fruit freely upon shoots of the previous year's growth. Whenever there is room, therefore, such shoots ought to be preserved and tied in. In time they will take the place of older branches. In dealing with the Pear one can safely summer prune all side shoots above the sixth leaf, and in winter shorten them to within about an inch of the base; but greater discrimination is necessary in dealing with the Plum. Summer pruning ought, nevertheless, to be practised, though good shoots of the previous summer's growth should be trained in, instead of being cut above the sixth leaf,

providing they can be accommodated without crowding the tree.

At the winter pruning the shoots which have been summer pruned are cut back to within one or two buds of the base in the usual way; but those that were tied in without being "stopped" are merely shortened by one-third. The leading shoots of the Plum—those that extend the branches—are not shortened at the summer pruning, but in winter one-third is cut off the end of each.

It is almost always necessary to lift and slightly root prune young Plum trees during the first two or three years following planting, otherwise they make such rank growth that the form of the trees is liable to be spoilt; moreover, such shoots do not bear fruit.

The amateur may well rest content with a limited number of varieties; of these there are many from which to choose. For standards, bushes, and pyramids he might choose from the following. Dessert varieties: Cambridge Gage, greenish; Denniston's Superb, yellowish green; Kirke's, purple; Oullin's Golden Gage, yellow; Reine Claude de Bavay, greenish. Cooking varieties: Belgian Purple, purple; Monarch, purple; Pond's Seedling, pink; President, dark violet purple; Rivers' Early Prolific, crimson purple; The Czar, dark purple; Pershore, yellow; and Victoria, pink.

The following are excellent for walls, all being dessert varieties: Coe's Golden Drop, orange with red dots; Denniston's Superb, greenish yellow; Early Transparent Gage, yellow with brownish spots; Green Gage, greenish; Jefferson, yellow and green with reddish spots;

Kirke's, purple ; Transparent Gage, greenish yellow with red spots.

Raspberry. Although the Raspberry will succeed under haphazard methods of cultivation, the finest fruits are only to be obtained when proper attention is given to the plants. An open place is suitable, although a little shade is not inimical to the cultivation of the Raspberry, especially when the ground is light and liable to get dry quickly. Deeply dug land, which has been enriched with yard manure, is necessary if the plants are to be grown well. Planting is best carried out in October or November.

Pruning. The chief point to observe in growing the Raspberry is that the best yield of fruits is obtained from the canes or stems that grew the previous year. As soon as the crop is gathered the old canes—those that have borne fruit—ought to be cut out, the fresh stems being trained in to take their places. On established clumps the new stems are usually produced so freely that it becomes necessary to remove some of them. Not more than six or eight should be left to each rootstock ; then they mature well and the crop will be satisfactory. No further pruning is required, except that in spring it is wise to cut off the tips of the stems if they appear to be soft. The same method of pruning is observed each year, the old canes being cut out and the new ones tied in to the supports.

The Raspberry is largely a surface-rooting plant, and the gardener ought, therefore, to be careful not to dig among the plants with a spade, or many roots are bound to be damaged. The soil between the

clumps should be forked over in spring, and a mulch of decayed yard manure is beneficial.

The Raspberry may be grown in clumps about 5 feet apart, three or four plants forming a clump ; in this case the stems are tied to a central stake. Or they may be planted in rows, the stems being trained on wires fastened to strong posts.

Good red Raspberries are Lloyd George (perpetual fruiting), Superlative, The Devon, and Pyne's Royal. A yellow variety to be recommended is The Guinea.

Autumn - fruiting Raspberries. These are just as easy to grow as the ordinary summer-fruiting kinds, the only difference in the treatment required is in the pruning, and this is important. While the summer Raspberry bears its fruit on the canes of the previous summer's growth, the autumn Raspberry produces its crop on the canes or stems of the current year's growth. Pruning must therefore be carried out in February. At that time the old canes are cut down to within about 6 inches of the ground level, the object being to force the plants to make the finest possible fresh stems which will bear fruit in autumn.

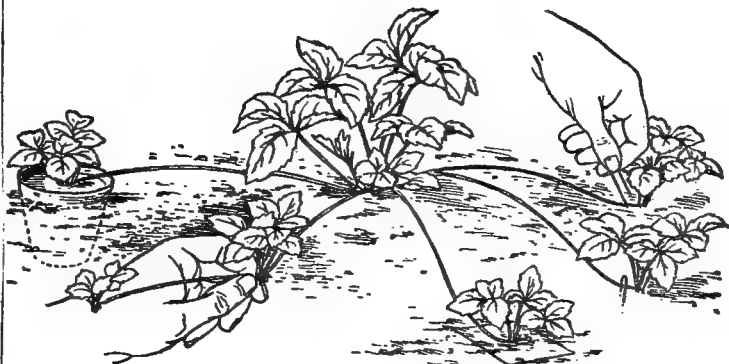
Both red and yellow varieties of autumn Raspberries are to be obtained. Of the former, Hailsham and October Red are reliable, and of the latter October Yellow may be chosen.

The perpetual fruiting Lloyd George Raspberry is pruned in the same way as the ordinary summer-fruiting kind.

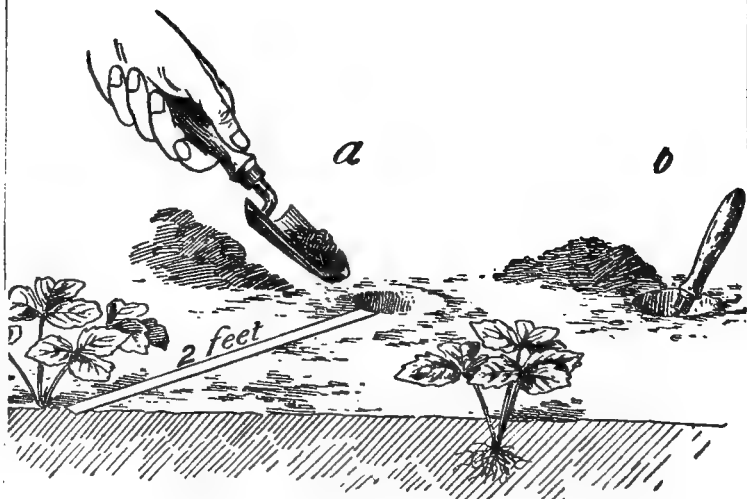
Strawberry. The best time to make a start is in August or early in September. If a few plants are then obtained, and are planted on ground that has been deeply dug

and manured, they will produce Strawberries for three summers. The best arrangement is to have the rows 2 feet apart and to put the plants 1 foot apart. After the

first crop has been gathered alternate plants in the row are pulled up, and all will then remain at 2 feet apart. It is necessary to plant firmly and to put the plants at such



Right ways of Layering Strawberries



Planting Strawberry plants: *a*, the correct way;
b, the wrong way

a depth that the crown or heart will be showing just above the soil.

The finest fruits are obtained from the first crop, providing the plants are put out on good ground not later than early September; many growers plant in August. The second year there will be a heavier crop of good fruits, while the third season the fruits will be small but very abundant.

The Strawberry plants need no attention during autumn and winter, except an occasional hoeing to keep down weeds and to ensure that the surface soil is loose. In spring, before the Strawberries come into bloom, it is usual to mulch between the rows and round about the plants with "long" or strawy manure; the "feeding" properties of this are washed down to the roots and the strawy part, which will remain, serves to protect the fruits from being spoilt by soil splashed up during wet weather.

Layering. Late in June layering must commence, if it is wished to increase the stock; in fact, this ought to be done every year so that there shall be fresh plants to replace those that are pulled up. Needless to say, it is advisable to make the fresh plantation on different ground from that on which the old plants were grown. This, like most other crops, benefits from fresh ground.

Several little plants will be found on each of the runners or stalk-like growths that are produced by the old plants. It is wise not to layer more than one on each stalk, and that nearest the parent plant is usually the best. A watch should be kept for those known as "blind" runners; that is to say, those having a defective centre.

The centre ought to be firm and full of embryo leaves. Having selected the runners to be layered, it remains only to peg down each one in a small pot filled with sandy soil. For this purpose small wooden pegs are commonly used, though hairpins will do, or pegs may be dispensed with altogether, merely a stone being placed upon the stalk of the runner to keep it on the soil. Instead of layering into small pots the gardener may peg the runners into the ground or in pieces of turf.

The little plants will soon form roots if they are kept moist, and in three or four weeks will be ready to remove. The stalks attaching the runners to the parent plants are severed, and the Strawberries may be at once planted out to form a new bed as already described.

Growing Strawberries in Pots. If it is intended to grow the plants under glass for the purpose of obtaining early fruits, the rooted runners are repotted into flower-pots 6 inches wide, and are kept out of doors until late autumn. A suitable compost for this purpose consists of good turfy loam with which a little decayed manure and bonemeal are mixed. At the approach of cold weather they are brought into a greenhouse or frame, and in January or February may be placed in slight warmth if early fruits are wanted.

Good varieties are Royal Sovereign, Fillbasket, The Duke, Sir Joseph Paxton, and Louis Gauthier.

Perpetual-fruiting Strawberries. These are strongly to be recommended to the amateur gardener, for they take up less room than most of the ordinary varieties, and they bear fruit from July until autumn. The plants need only to

be put 12 inches apart. All flower stems that show before late June should be pinched off, then the plants will continue to fruit as stated. These Strawberries may be increased in the same way as the ordinary sorts, namely, by means of layers; they may be raised from seed sown in warmth in early spring, and will then fruit the same year. It is best to propagate annually or biennially, for young plants are more satisfactory than old ones.

Of the several varieties, one called St. Antoine de Padoue, having red fruits of quite fair size, is to be strongly recommended.

Vine. Good Grapes may be grown perfectly in a greenhouse that is in a sunny position and can be freely ventilated; no warmth is required unless it is necessary to obtain an early supply of fruit. It is, however, certainly an advantage in a dull, wet season to be able to heat the greenhouse for the purpose of keeping the atmosphere dry when the Grapes are ripening. Nevertheless, in an average season it is possible to bring the crop to maturity without the aid of artificial warmth.

Making a Vine Border. The Vines must be planted in a properly prepared border. It does not matter whether the border is inside or outside the greenhouse. The existing soil, unless it is really of good quality, must be excavated to the depth of from 2 to 3 feet. In the bottom of the hole thus formed a layer of broken brick or clinker is placed to ensure perfect drainage, and upon this is put a layer of old turves, grass side downwards. The remaining space is filled with a prepared compost, consisting of old

turves, each chopped into six pieces with a spade, together with a sprinkling of bonemeal, soot, basic slag, and wood ashes. The usual plan in forming a Vine border is to make it 3 feet in width, and to enlarge it every few years as becomes necessary, until the border is 6 feet wide. This is better than making it the full width at first.

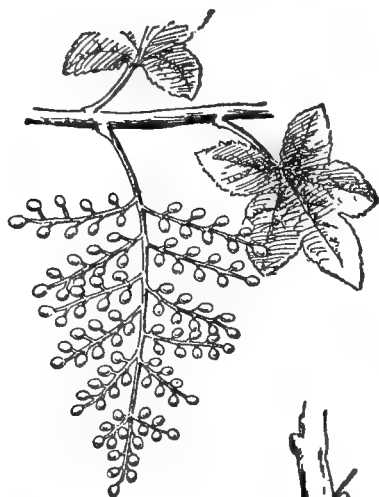
Planting should take place in autumn, a few weeks after the completion of the border; this will allow time for the soil to settle to something like its normal level. The uppermost roots ought not to be deeper than 2 inches or so beneath the surface, and all roots should be spread out as much as possible.

Pruning and Training. If the Vine is one year old only, it will be necessary to prune hard, to within 6 or 8 inches of the base, late in January of the year following planting. One or two of the buds, at least, will start into growth as spring advances, and if it is intended to restrict the Vine to one stem, the weakest of the shoots is rubbed off. Great care must be taken of the remaining shoot, for this will form the stem of the Vine.

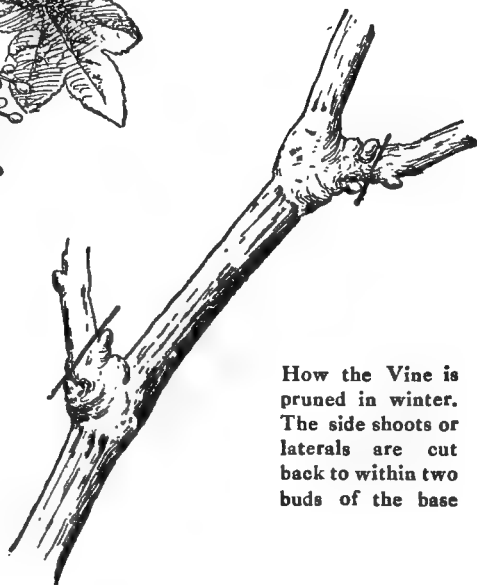
The following spring the Vine is pruned back to within 4 or 5 feet of its base. Numerous buds will start into growth, and all those between the bottom of the trellis and the ground ought to be rubbed off, thus giving the Vine a clear stem from the soil to the trellis. Some of the shoots on the upper part of the Vine must also be removed. The object is to encourage lateral or side shoots on each side of the stem at about 15 to 18 inches apart; those on one side alternating with those on the other.



Stopping the Vine shoot at two leaves beyond the bunch



Bunch of Grapes as it appears when thinned



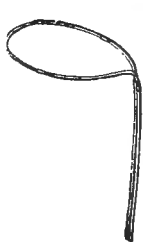
How the Vine is pruned in winter. The side shoots or laterals are cut back to within two buds of the base

The following January the leading shoot—the continuation of the stem—is shortened to within 3 or 4 feet of its point of origin, and the stem of the Vine thus becomes 9

or 10 feet long. Further lateral or side shoots will form, and they must be regulated in the same way as those of the previous year, which are now shortened to within one or

two buds of the base. If both buds start into growth, only one (that which bears a bunch of Grapes) is allowed to remain, the other being rubbed off. Further laterals will

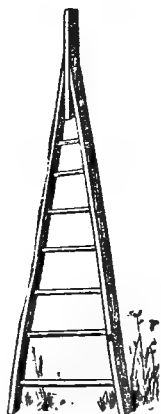
form on the new part of the stem, and they must be regulated in the same way as those of the previous year—that is to say, they must not be closer together than 15 or 18



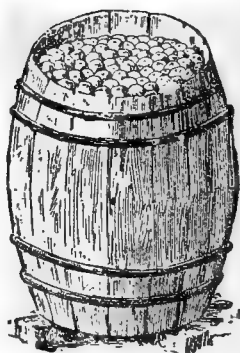
Canvas bag on long handle for gathering fruit



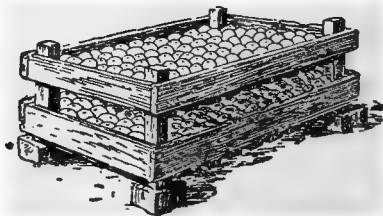
The fruit is raised gently when being gathered



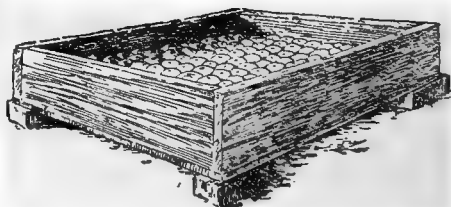
A convenient form of ladder



Barrel containing Apples: it is raised on bricks



Shallow trays with lath bottoms



Apples stored in box raised on bricks

inches. In this way the Vine stem increases at the rate of 3 or 4 feet each year until it reaches the top of the vinery. Subsequently growth is restricted to the lateral or side shoots.

Annual Pruning. In January the side shoots which produced the crop of Grapes the previous summer are cut back to within two buds of the base. This is drastic treatment, but it is the correct procedure. If the two buds grow, only one is allowed to develop; if neither shows fruit, the stronger of the two is retained. The shoots will make quick progress as the summer advances, and in due course their points must be pinched off; those bearing a bunch of Grapes are "stopped" at one joint beyond the bunch, those bearing no fruit are "stopped" when they have grown about 12 inches in length. In due course further shoots, termed sub-laterals, will form; they must be "stopped" as soon as they have formed one joint, and any further shoots that form must be treated similarly.

If the Vine is in an unheated greenhouse it will commence to grow in March. Throughout the winter and until growth begins the vinery ought to be aired freely, the ventilators being left open night and day. The amateur should aim at maintaining a regular temperature in the vinery in spring, say, from 45 to 50 degrees at night, with a corresponding rise during the day.

When the Vines are in bloom the ventilators ought to be opened wide if the weather is favourable. When the Grapes are about the size of small marbles they pass through what is known as the stoning period; at that time it is particu-

larly necessary to maintain a regular temperature.

Thinning the Grapes is a task that calls for attention when the berries are about the size of small peas. A pair of grape scissors, having long, tapering blades, is necessary, and a small forked stick with which to hold the stem of the bunch is also required. All small, seedless berries are cut out first, then those from the centre of the bunch. The berries at the ends of the branchlets must not be cut away, or the symmetry of the bunches will be spoiled.

During hot summer weather the floor and walls of the vinery should be syringed several times a day to keep the atmosphere moist. Vines should never be shaded, except sometimes to preserve the fruit or to help those planted in spring to become established. When, in spring and early summer, the ventilators are closed late in the afternoon to encourage growth, the Vines and their surroundings should be syringed freely. The gardener must take care that the border does not suffer from want of water; nothing is so likely to lead to failure as dryness at the root.

During winter it is advisable to syringe the Vines well with paraffin emulsion. Loose bark, likely to serve as a hiding-place, should be removed, and it is beneficial to brush the stems with Gishurst Compound for the purpose of killing insect pests. Care should be taken not to damage the buds.

The best black Grape for amateurs is Black Hamburgh. Alicante and Madresfield Court are also to be recommended. Of the so-called white Grapes the reader is advised to grow Foster's Seedling.

CHAPTER 57

The Rotation of Crops

WHEN gardeners speak of the rotation of crops they mean their cultivation, in a definite and prearranged order, on a different plot each year for a period of years; thus as long a period as possible elapses before any particular crop occupies the same ground again. It is not necessary to go very deeply into this subject to become convinced that its application to any vegetable garden must be advantageous.

To the methodical mind a great advantage is that the garden can be planned out during the winter on paper, allotting to each crop its necessary space according to the demand for it and the space at the grower's disposal. This, of course, is a very real benefit, because the preparation of the various plots can then be undertaken with due regard to the requirements of the crops, and much time is saved when the busy season of seed sowing or planting out arrives, because the allotted areas will already have been marked out, and it only remains to prepare the seed-beds for sowing.

Another, and perhaps the greatest, advantage is that each crop has a fresh site each year for a few years until ultimately it comes back again to the plot on which it was first cultivated. This must be all to the good; it is very evident that if the same crop, requiring the

same kind of food, is grown year after year on the same ground, the soil must gradually lose much of the particular food which that crop especially needs; even if the plot is scientifically manured with the idea of maintaining the supply of this particular plant food, that plan will be found far less economical than the adoption of a proper system of crop rotation.

There is a third advantage—economy in manures—not a small consideration to most gardeners nowadays. This economy is possible because different crops need, and therefore extract from the soil, different plant foods.

To give an extreme illustration of this point—if a certain piece of ground was so exhausted of the food required by a given crop that this practically failed for want of nourishment, and another crop with quite different requirements was grown on this area, the latter would be more or less a success. No one would carry matters to this extreme of course, but it shows that when an enthusiastic gardener trenches and manures his vegetable garden in the same way annually he is actually wasting manure, because if rotation were practised a good deal of it would have disappeared by the time the crop needing it had "reached" that site.

On the other hand, it would be equally futile to go to the opposite extreme and use no manure at all, although it is undoubtedly true that, under proper rotation, ground not manured at all would yield better crops for a longer time than if no rotation was practised. It will thus be seen that to obtain the best results from crop rotation the cultivator needs to study the effect of various manures on the crops. If he has not the time or the inclination to do this, the main principles should at least be understood.

Finally, there is the advantage of securing better crops, because there is less likelihood of a crop being attacked by disease or various insect pests when it is moved regularly, whereas if it was not moved after an attack of pests or disease one season the probability is that it would be more or less a failure the following season.

Many readers can no doubt recall instances of crops being grown on the same site year after year with success; the writer himself has grown Potatoes where they had been grown continuously for twenty years, and the crop was invariably satisfactory, although hardly any manuring had been done during that time. In this case the soil contained abundant supplies of the food needed by Potatoes, but very few other crops were satisfactory unless the land was specially prepared for them.

It is a comparatively simple matter to draw plans of gardens under a system of crop rotation which are theoretically correct in every detail, but it is far less simple for the amateur to adapt these plans to his own garden. To begin with, how many amateurs possess a

kitchen garden which is conveniently divided into four squares of equal area, which is usually assumed to be the case? Then, again, it is impossible to lay down any hard-and-fast rules, because the demands of no two households for particular crops are similar. It is therefore the intention of the writer to give general suggestions only along the lines of the rotation usually adopted, and it should not be a difficult matter for the novice, once he has mastered the main principles, to adapt these suggestions to his own garden and his own requirements.

Three-course Rotation. The systems of rotation usually followed are known as the three-course and four-course respectively. The three-course system is usually found satisfactory in the working of small kitchen gardens, and is equally suitable for many of larger size. The garden is divided into three parts and numbered for convenience. Plot 1 the first year is well trenched and manured for Peas, Beans, Celery, Leeks, Onions, with Turnips, Spinach, Lettuce and Radishes grown as "catch crops" between the Peas and Beans. Dwarf Beans are also often grown between Celery trenches.

Plot 1 the second year is not manured, as fresh manure is detrimental to the crops it will provide, namely, root crops such as Carrot, Parsnip, Beetroot and Salsify, and Potatoes may also be included here if necessary. In the third year the plot is again well manured and devoted to the Cabbage family, usually known as brassicas, including Brussels Sprout, Broccoli, Kale, Cabbage, Cauliflower, and Savoy.

Plot 2 will commence with the

root crops the first year, and continue with the brassicas, and then the Peas, Beans, etc.

On plot 3 brassicas will first be grown, next Peas, etc., and finally the root crops. These three plots are, of course, extra to any portion of the garden which may be devoted to permanent crops.

The four-course system need not differ materially from that outlined above, except that the additional plot is devoted to Potatoes, which follow the brassicas and come before the Peas and Beans. Little manuring should be needed for this crop, but artificials may be used when the Potatoes are through the soil. When rotation of crops is practised, and animal manure also is used as advised, artificial manures are very beneficial, provided they are carefully applied.

There are variations of both the systems explained above, and there are also longer systems, but giving details of the former might merely cause confusion in the minds of novices, with little compensating advantage. The four-course is

usually found to be the most practicable system ; it is better than the three-course plan where it can be conveniently worked, because of the extra year before any particular crop occupies a plot again. Even though the three or four plots may be of awkward shape, a plan of them should be kept, and the crops grown on the respective plots should be entered in a book provided for the purpose each year.

Alternatively the position of the crops may be marked on the plan, a new plan being made each year and dated, the old ones being kept for future reference. Details of ground treatment and manuring should also be noted on such plans, or in the book, while a record of the yield of crops will provide useful information. Thus, by adopting the rotation of crops in the kitchen garden, the amateur is really running it in a methodical, business-like manner ; by keeping records he can see at once the effect of the system, and the unreliable method of trusting everything to memory is eliminated.

CHAPTER 58

The Chief Kinds of Vegetables

ARTICHOKE, *Globe*. Globe Artichokes usually occupy the ground for four or five years : thus the plot intended for them must be thoroughly prepared. Deep digging is essential, and manure should be added when the work is being carried out in autumn or early winter. The plants should be 3 feet apart, and the rows ought to be 4 feet from each other.

This Artichoke is propagated by seeds and by suckers taken from old plants. Seedlings seldom come true to type, therefore the suckers are usually preferred. If seeds are sown, March is the time to get them in. Sow them in groups after marking their positions in the bed, and subsequently reduce the seedlings to one in each group. Suckers are the young growths which spring from the base of an old plant. These are taken off carefully, with as much root and soil attached as possible, and planted in their permanent position in April. Tread them in firmly when planting ; this is an important detail. A light mulch of old manure may be given.

Throughout the summer copious supplies of water during dry weather will promote free growth, especially if the soil is light. Each flower stem produces several heads, a central one, and other lateral or secondary ones. When the heads

are cut the stems also are cut down ; if some of the Artichokes are not likely to be wanted, cut them down rather than allow them to flower.

Globe Artichokes are not perfectly hardy in all districts, or on all soils. Some protection ought therefore to be provided in case the winter proves severe. Ashes should be heaped over the crowns in the autumn, and when hard frost seems likely straw or dry litter may be placed over the plants. When danger of severe weather is past, at the end of March, remove all protective materials and fork in a dressing of manure. Whether the suckers are wanted for propagation or not they must be reduced to three or four on each plant at this time.

Artichoke, Jerusalem. Because it will grow anywhere and under almost any conditions, the Jerusalem Artichoke often receives little or no care in small gardens. If it is grown merely as a screen or wind-break, and the tubers are quite a secondary consideration, that does not matter ; but if the roots are appreciated it will be found that there is no comparison between those grown on properly prepared land and others from poor ground. The plants reach a height sometimes of over 10 feet.

Planting is carried out in the

winter or early spring ; the roots are set at 6 inches deep and 15 to 18 inches apart. The rows should be 3 feet from each other.

In exposed positions rough winds will blow the stems about badly if they are not supported, but it is usually sufficient to erect a few tall poles and connect them with rope or wire run round the plot. In November cut down the stems and lift part of the crop for use, storing the tubers in sand or ashes in a shed, or they may be clamped in the open. The remainder can be left to be taken up as required during the winter. Early in the year the whole plot should be cleared, and digging must be carefully carried out to avoid leaving pieces in the soil, as these will grow and become a nuisance later. The white variety of Jerusalem Artichoke should be chosen in preference to the old purple.

Asparagus. Asparagus is found growing wild on sea coasts, and prefers sandy soil containing salt. The possessor of heavy soil should lighten it by the addition of such materials as old lime rubble, decayed leaves, burnt earth and sand.

On such land it is advisable to raise the bed 9 inches or so above the surrounding level. On light, well-drained land the bed is best on the flat, or it will dry out badly in summer.

The actual preparation of the soil involves digging 2 feet deep and adding a liberal dressing of partly decayed manure. If one bed only is to be made, the width to be treated should be 9 feet—5 feet for the bed itself and 2 feet for the path on each side. Following the last digging, leave the surface rough

until March, when it can be forked over and made ready for planting or sowing in April.

Sowing Seeds. Asparagus is readily raised from seeds, which may either be sown in the prepared bed to avoid transplanting later or in a reserve bed where the seedlings will remain until they are large enough to move. In the former case the garden line is fixed where the rows are to come, and holes are made about 2 inches deep at 15-inch intervals ; in these holes a few seeds should be placed and covered with soil. A 5-foot bed will accommodate three rows, 18 inches apart, leaving a margin of 12 inches outside each outer row.

The seedlings must be attended to when they are about 4 inches high, and one only—the strongest—is left at each station. If seeds are sown on a reserve bed, the seedlings to be transplanted later, the drills should be 15 inches apart and the seeds sown at 12-inch intervals, the seedlings being subsequently thinned to one at each group. The plants from the reserve bed can be moved into their permanent quarters when they are two years old.

Planting an Asparagus Bed. The commonest method of planting an Asparagus bed, particularly in small gardens, is to purchase roots which have been grown by nurserymen, those two years old being the most suitable as a rule. These will not be sent out until April, which is the best time for planting. It is important to waste no time in the actual work of planting, for it is very harmful to allow the roots to become dry. The roots of Asparagus plants grow down from the crowns at an angle, and the

best way to plant them is on ridges formed like an inverted V, the roots being laid on each slope. The crown or growing point should be about 5 inches below the surface, and the soil must be made firm. Lose no time in covering them, especially if sunny weather prevails; a small number should be planted and covered rather than place all the roots before filling in.

The temptation to cut Asparagus before the second year after planting should be resisted, as it would be weakening the plants to do so; if they are allowed to make strong growth much finer produce will result when they are established.

Weeds must never be allowed to grow in an Asparagus bed; although hoeing is possible the first season, in later years hand-weeding should be the rule. Support all strong growths in good time to prevent the wind damaging them—this is often accomplished by the use of pea sticks among them. Such crops as Lettuce and Cauliflowers may be grown in the alleys at the side of the bed the first season, but later on this will be impracticable.

Late in the autumn, when the growth has died down, it should be cut and all weeds cleared off at the same time. Then apply a mulch of partly decayed manure, unless the soil is very light, when this may be deferred until the spring. Any loose soil from the alleys may be thrown over the manure.

Early in the following April rake off the rough surface material into the alleys, remove weeds and apply a light dressing of salt. This is helpful to the crop and discourages weeds. Two further dressings of salt at monthly intervals may be

given. In the second season following planting good produce should be available, and cutting should be carefully carried out to prevent damage to young shoots. Cutting should be discontinued after the third week in June.

Bean, Broad. This is one of the most popular vegetables. Even under indifferent cultivation it usually produces a fair crop, and with good treatment a prolific yield may be expected. It will thrive on any soil that is prepared by deep digging.

The first sowing of Broad Beans may be made in November on light soil in a fairly sheltered spot; in heavy soil or exposed gardens it would be waste of seeds to sow in autumn. The Beans should be placed 6 inches apart in double lines, the lines of the row being 9 inches from each other; the Beans are covered with 2 inches of soil.

If a November sowing is considered inadvisable, a first sowing is often made late in January or early in February. The main crop is sown in March; further sowings may be made at intervals of a fortnight until April, if necessary. Choose a longpod variety for the early sowings and one of the Windsor type for later use; the latter do not crop so heavily, but the flavour is excellent.

Varieties are numerous. Among the longpods Prolific and Exhibition are good white-seeded sorts, and Green Giant an excellent green-seeded Bean. A good strain of Green Windsor will prove satisfactory in the Windsor class. A recently introduced type is of dwarf and branching habit, seldom exceeding 1 foot in height, but free-bearing. This is known as The Sutton, and

will prove very useful, particularly in small gardens.

Bean, French. Dwarf Beans are variously known as kidney or French Beans, but the adjective "dwarf" seems to be most suitable, as it distinguishes them from the Runner Beans, which the other titles do not. They are easily grown, yet the amount of produce secured from a row or two is amazing. They have one great advantage over the Runner Beans in that no stakes are needed. If the ground was deeply cultivated in autumn or winter nothing further need be done in the way of soil preparation, except that the surface should be forked over shortly before sowing time.

When to Sow. It is not safe to sow out of doors before the third week in April. The seeds are sown in lines running north and south preferably; if the soil is "fine" they may be dibbled in about 2 inches deep, otherwise draw a wide, flat-bottomed drill in which to sow. The seeds should be sown at 4 inches apart, the plants being thinned to 8 inches from each other. During summer frequent hoeing is beneficial, and on light land watering during drought is sometimes necessary.

To keep up a succession further sowings should be made at intervals according to the demand, but as a rule two or three sowings from the third week in April to the middle of May usually suffice. The Beans must be gathered whether required or not, for if they are left to mature further production soon ceases.

There are many varieties of dwarf Bean from which to make a selection. A variety which still holds its own is Canadian Wonder. Other sorts which can be recom-

mended are Early Giant, Selected Ne Plus Ultra, and Perfection.

The yellow-podded varieties of these Beans are favourites with many, being known as butter or waxpod Beans. They are certainly of excellent flavour and well worth growing. Golden Waxpod and Golden Butter are two good varieties.

Bean, Runner. Runner Beans, or Scarlet Runners, to give them their more popular name, are invaluable in summer and early autumn. The usual method of digging and manuring a trench about 1 foot in width is all very well in its way, but it does not provide a heavy and continuous crop. The best plan is to trench and manure a 3-foot width of the required length.

Sowing may begin at the end of April in the south, but in colder districts it is not safe to sow until mid-May as slight frost will ruin the young plants. The seeds are sown about 2 inches deep in double lines, allowing not less than 9 inches between the lines. It is well to sow somewhat thickly, as in a cold, wet spring, especially in heavy soil, some of the seeds rot, and it is always easy to thin the young plants if too many come up. They should be about 9 inches apart after thinning. Allow 6 feet between the lines.

To support the Beans, sticks such as are used for Peas, but much longer and stouter, are best. See that they are inserted firmly and sufficiently deep to be rigid. They are usually made secure by long rods tied on each side at about two-thirds of their height. Another method is to insert strong stakes at intervals along the line, and connect them with cord to which

the Bean sticks are tied. Some such support is essential.

It is possible to grow Runner Beans without supports if they are kept low by pinching out the points of the shoots frequently. They will still bear well, but hardly so freely as when they are grown on tall sticks.

Runner Beans often fail earlier than they should do through inattention. Dryness at the roots and lack of plant food are the chief causes. A mulch of manure applied as soon as dry weather sets in will keep the roots cool and moist.

Prizewinner is still one of the best varieties, while Hackwood Park Success, Scarlet Emperor, and Best of All are good. The Czar is a white-flowered sort, which, with Painted Lady, will give an attractive display of bloom.

The cultivation of climbing French Beans is similar. They resemble the dwarf or French Beans, except that they are of climbing habit of growth. Tender and True is a good variety.

Beetroot. In common with other root crops, Beetroot thrives best on land which has not been manured recently. If the soil is heavy, add road sweepings, fine mortar rubble, sand, and old potting soil. Salt will benefit this crop; it tends to make heavy soil sticky, but keeps light soil moist.

For summer supplies it is usual to make an early sowing of the Globe or Turnip-rooted Beet in March or early in April. Draw the drills 15 inches apart and 1 inch deep. Distribute the seeds thinly, and cover with soil. Thin the seedlings to 12 inches apart, and hoe the soil between the rows regularly. The roots from these early sowings are

lifted as they become large enough for use.

The main crop of Beetroot is not sown earlier than the first week in May, when there is little risk of frost harming the seedlings. For this sowing the long-rooted Beetroot is preferred. Beetroot seeds are so large that they can be sown thinly without difficulty. Instead of sowing all along the drill, it is customary to place groups of three or four seeds at 9-inch intervals. This is economical of seeds, and thinning is simply a matter of reducing the seedlings to one in each group. Summer cultivation is merely a matter of hoeing frequently, until the growth of the foliage puts an end to it.

Lifting the early sown crops should take place before the roots become very large, otherwise they will be coarse and useless, but lifting the main crop is done in autumn. If there is lack of storage room Beetroot may be left in the soil if given a little protection in severe weather, but storing in a cool, frost-proof shed is preferable. Another method is to make a clamp outside, as is done for Potatoes. Dry sand or ashes is the best material in which to store Beetroot. Careful handling is essential; badly broken roots will be useless for the table, and it is advisable to twist rather than to cut off the leaves.

Varieties of Turnip-rooted Beet are usually catalogued as Globe or Egyptian. Of the long-rooted varieties there are many to choose from, e.g., Cheltenham Greentop, Nutting's Dwarf, Blood Red, and Dell's.

Borecole or Kale. Borecole, generally known as Kale, must be regarded as one of the most valuable of winter greens, not merely

because of the amount of produce it yields, but because of its hardness. The Kales will thrive on any soil. It must be dug deeply in advance of planting time, for it should be firm.

A first sowing is generally made in March, followed by another in April. The seeds are sown in shallow drills on a reserve border. Fish netting is the best protection against birds.

Hoing occasionally to keep down weeds will be all the attention required until the plants are large enough to put out into their permanent positions. The earlier in the summer this can be done the better, and dull weather is naturally best. July is the usual time for the work. Let the plants be 2 feet from each other.

It is found that the seedling Kales are becoming crowded in the seed bed and there is no vacant plot on which they can be planted permanently, it is wise to transplant them, putting them at 6 or 8 inches apart. They may then remain undisturbed until they can be put out permanently.

AI is a good variety of Scotch Kale with curled leaves, while Extra Curled, Cottagers', and Hardy Sprouting can all be recommended. The Asparagus Kale is much appreciated by some, and another variety which yields an astonishing amount of green stuff is known as Thousand-headed. The Russian Kale is useful and the leaves are ornamental. Several Kales with highly-coloured leaves are sometimes used in the flower garden, but they are not recommended for the kitchen garden or allotment.

Broccoli. One thing Broccoli must have if it is to be a success,

and that is firm soil ; failing this the plants are likely to grow vigorously, but the produce will be disappointing. Broccoli are classified in sections according to the season at which they mature, and even in small gardens it is necessary to sow three varieties, one from each section, if a long succession of produce is desired. The seeds are sown on a prepared seed bed in drills $\frac{1}{2}$ inch or so deep and 7 or 8 inches apart. Birds and slugs must be prevented from doing damage to the seedlings.

When to Sow. It is not good practice to sow all the varieties at one time. Thus, autumn Broccoli should be sown late in March or early in April ; winter sorts during the latter half of April and spring Broccoli about the end of April ; those very late varieties which come in about June may be sown in May. The latter, however, have a tendency to "turn in" prematurely if the weather is hot, thus causing a glut, so the amateur is not advised to grow many of them.

They should be planted permanently before they become crowded in the seed bed, in July. It matters not how hard the soil may be, do not dig it before planting. In any case, make the soil very firm about the roots. The distance from plant to plant should be from 2 feet to 2 feet 6 inches, according to the variety ; some sorts grow larger than others. The same space should be allowed between the rows.

In cold districts Broccoli are apt to suffer badly in frosty weather, and as a means of protecting them to some extent, "heeling" the plants over towards the north is practised. This is done by taking out a spadeful or two of soil from

the north side of the stem, pushing the plant over, and covering the stem with soil. When the work is completed all the plants will lean to the north instead of being upright ; thus the sun will not shine on the "heads" while they are frozen.

In their respective classes the following varieties can be relied upon to give every satisfaction : For use in autumn, Michaelmas White, Self Protecting Autumn, and Walcheren ; winter varieties, Superb Early White, Snow's Winter White, and Backhouse's Winter White ; spring Broccoli, Leamington Snow White and Knight's Protecting ; for the latest crop Late Queen, Veitch's Model, and Whitsuntide are good.

Sprouting Broccoli should always be grown in addition to the ordinary sorts, the purple being usually more satisfactory than the white. These vegetables are very hardy and will give a continuous supply of sprouts over a long period in early spring. Their cultivation is the same as for ordinary Broccoli ; the seeds are sown during the first fortnight in April.

Brussels Sprouts. These require a long growing season, and they are sometimes poorly grown because this fact is not remembered. The earliest sowing should be made in boxes of soil in a cold frame about the middle or end of February. When the seedlings have formed three or four leaves they should be pricked out on a sheltered reserve bed, allowing 6 inches between the plants. They should be transferred to their final positions before the leaves begin to overlap. Further sowings may be made for succession in the open ground during March or April.

The land should be dug two spits deep in spring, and a liberal supply of farmyard manure incorporated : the manure need not be well-rotted ; in fact, somewhat fresh manure is excellent for Brussels Sprouts. In the early spring a dressing of lime ought to be given and forked in lightly. The plants are set out permanently in July 18 inches apart in rows 2½ feet from each other.

It is a good plan to remove all decaying leaves from the beginning of autumn onwards : and it is better to cut them rather than pull them off. When the sprouts are ready to be gathered, do not cut the head first ; begin at the bottom, and cut off the side leaves after the sprouts which spring from their axils have been gathered.

There are numerous varieties of Brussels Sprouts in the seed catalogues of seedsmen. A few of the best are Covent Garden Favourite, Fillbasket, Matchless, and Market Favourite. The Wroxton, Little Gem, and Dundee are varieties of compact and rather low growth.

Cabbage. In small gardens the Spring Cabbage is a favourite crop—often it is the only kind of Cabbage grown ; in gardens of larger extent it is certainly one of the most important crops of the year. Seeds are sown in late summer to obtain plants which will reach maturity in the spring. It is very important to find out the most suitable date for sowing in the locality. In late districts it will be some time in July, but in the south late July and early August are soon enough. If seeds are sown too early for the district the plants may "run to seed" instead of "hearting" in early spring. On the other hand,

a too late sowing produces small plants which are liable to die off during winter, and if they live the "heads" develop late. For these reasons it is advisable to make two sowings at an interval of a fortnight and to choose an equal number of seedlings from each lot for the permanent bed.

A seed bed should be prepared by digging and by breaking down the surface until it is "fine"; an open position is necessary. The drills are drawn $\frac{1}{2}$ inch or so deep and 10 inches apart. Thin sowing is essential as the seedlings will be left in the seed bed until planted permanently, and sturdy plants are needed to face the winter.

Cabbages do well only when grown on soil which has been well manured. This does not necessarily mean freshly manured; Spring Cabbages are often planted on a plot where Onions were grown during the summer. The distance to allow from plant to plant is 15 inches, but the varieties vary so much in size that a little more or less may be suitable. If some of the Cabbages are to be pulled when young and used as "Coleworts" put them 1 foot apart and pull alternate plants, leaving the rest to develop. The rows should be 18 inches apart for small varieties of Cabbage, 2 feet for vigorous ones. September is the best month for planting. On no account should the remaining seedlings be destroyed when the required number has been put out; there will almost certainly be a few losses to make good in early spring.

Two further sowings of Cabbage seed may be made where the demand justifies it. The first is in March, using an early variety to "turn in" for use in summer and

early autumn; the second sowing is of the Colewort (a small Cabbage) in May, to provide produce in autumn and early winter. The cultivation of these is much the same as that of Spring Cabbage, except that they need not be given so much room. Odd corners will accommodate them provided the site is open and the ground in good condition. A further sowing of Colewort in June provides a welcome crop in autumn; the seeds should be sown where the plants are to grow, the seedlings being thinned to 10 inches apart.

For sowing in July and August a selection may be made from Flower of Spring, Imperial, Harbinger, April, and Ellam's Early Dwarf. For sowing in spring, Sutton's Earliest, Imperial, Summer Drum-head, and Improved Winningstadt can be recommended. The Rosette Colewort is a favourite for sowing in May and June.

Red or Pickling Cabbage. Seed should be sown in April to produce Cabbages for cooking purposes, and in August if they are wanted for pickling. The plants must be given deeply dug and well enriched soil, and they need a space of 2 feet each way. For pickling, cut them after the first frost. Large Blood Red is the best variety in this class.

Carrot. The Carrot, like most other root crops, does best in deep soil, but it must be free from newly added manure. A plot which was well manured for a crop the previous summer, if dug deeply in winter, will suit this vegetable admirably.

The first sowing is made in March on a warm and sheltered border. The soil should be raked down very

finely, old soot and wood ash being worked in. Draw drills 1 foot apart and sow Radishes between. Thinning should be done in good time, but as the roots will be drawn for use when small there is no need to thin them to more than 3 or 4 inches apart.

Another rather larger sowing should be made before the month of March is out, in a similar position and treated in the same way. If young Carrots are in great demand, further sowings should be made at intervals from early April until mid-July. Summer sowings should be made in the open garden, and thinning must be carried out before the seedlings become crowded. Those sown in June and July are very useful. It is necessary to choose a small early variety for these sowings, e.g., Early Horn.

In addition to these sowings to provide a continuous supply of small roots there is the main crop grown for use in winter, which is sown at mid-April. Draw very shallow drills—which should run north and south if possible—1 foot apart, and scatter the seeds thinly along these. The drills should be from $\frac{1}{4}$ inch to $\frac{1}{2}$ inch deep. Carrot seeds are very light, and it is difficult to sow them evenly on a windy day. To ensure uniform distribution it is a common practice to mix dry sand with the seeds before sowing. Passing the rake over the bed will cover the seeds sufficiently. By thinning the plants on two occasions the young roots taken out the last time will be valuable for use in the kitchen; those remaining should be about 8 inches apart.

Early in autumn the crop will be ready for lifting. After trimming

off the tops store the roots in sand or ashes in a cool shed or cellar for use as required. Failing this convenience, pack them in a heap under a north wall in the same material; here they will keep nearly as well. The roots from a July sowing are often left in the ground to be drawn as wanted.

For the early and successional sowings of Carrots Short Horn varieties are suitable as they mature quickly. Noteworthy among these are Early Horn, Champion, Scarlet Horn, Early Nantes, and Early Gem. For the main crop the intermediate type is usually chosen, of which New Red Intermediate, St. Valery, and James' Intermediate are all good. If a very long-rooted variety is wanted choose Altrincham, Long Red Surrey, or Red Elephant, but these require very deep soil to do well.

Cauliflower. The Cauliflower differs from the Broccoli in being less hardy and of milder and better flavour. It is possible, with good management, to have one or other of these vegetables the whole year round, the season of the Cauliflower being from May until the autumn. Two or three sowings should be made if the heads are likely to be required throughout this period.

The most important sowing is that made in early autumn. The exact date to sow depends on the district, late August or early September being a good average time. Choose a rather sheltered spot for the seed bed. As soon as they are of sufficient size the young plants are transplanted, as many as possible in a cold frame, the others in warm corners out of doors where they are likely to pass through the winter safely. They should be set about

4 inches apart. The frame must be freely ventilated all through the winter except when the weather is severe. During sharp frosts the frame must be covered with mats.

When risk of cold weather is past, in April, plant out the Cauliflowers in a somewhat sheltered spot. Rich soil is best as it promotes free, quick growth. The plants should be placed 2 feet apart.

To provide a succession a sowing under glass should be made in February, the plants being transplanted to boxes before they become crowded, hardened off, and subsequently planted out when well rooted. Many gardeners do not think it worth while to sow under glass in February; they rely on an August sowing and the main crop grown from seeds sown out of doors in April. Often the latter is the only sowing of the year, two varieties being chosen, one to provide summer and the other to provide autumn Cauliflowers.

Sow very thinly and net or cotton the bed at once, as birds may pull up the seedlings. Move the plants into their permanent quarters before they become weakened by overcrowding or very large. It is most important not to check the growth of the Cauliflowers; if seedlings are left in the seed bed to crowd one another it can hardly be expected that they will produce fine "heads."

The young plants raised in April will probably have to be put out between rows of garden Peas. For summer Cauliflowers it is hardly possible to make the soil too rich.

If numerous "heads" become ready for use all at once they can be kept for some days by lifting

the plants and hanging them heads downwards in a cool, dark shed. This plan may also be adopted with the autumn crop when frost threatens.

Varieties are numerous. For autumn and early spring sowing First Crop is an excellent Cauliflower. Universal and Walcheren should be sown in April for summer use, while for later supplies Early Giant, Autumn Mammoth, and Veitch's Autumn Giant can be relied on, seeds also being sown in April.

Celery. Celery is a crop which takes up a considerable amount of room that can often be ill-spared in a small garden. But the cultivation of this crop improves the soil owing to the trenching, manuring, and earthing up required, and for that reason and for its own value in winter it deserves to be grown. Celery is not one of those crops that look after themselves once they are planted; any neglect which causes a check to growth is likely to have a serious effect.

Raising the Seedlings. To obtain Celery fit for use in early autumn artificial warmth for raising the seedlings is essential. It is important to avoid sowing too early; the first week in March will suit the majority of amateurs. Fill a box with soil similar to that used for potting, but sifted to remove the coarser parts. Make the surface level, water, and after allowing time for draining, scatter the seeds very thinly. Cover lightly with fine sandy soil, then with brown paper, and place in a temperature of about 55 degrees. Watering may not be needed until germination has taken place, but the soil must be kept moist.

Immediately the seedlings begin to appear remove the covering of paper, and place the box in a light position so that the growth of the plants does not become "drawn" and weak. They must be transplanted in boxes of rich soil before they become crowded and must be kept under glass in a temperature of about 50 degrees, being gradually hardened off in readiness for planting out.

For the main crop of Celery another sowing must be made later in March, the same procedure being followed until the seedlings are ready to transplant, when, if a cold frame is available, they should be put there in a bed of soil on a layer of decayed manure, keeping the soil rather near the glass.

The less delay there is in planting out Celery the better, once the plants are of sufficient size. When taking out the trenches some time in advance of planting time arrange to have them as near the water supply as possible. Mark trenches out at from 4 to 5 feet intervals; in digging remove one "spit" of soil, placing one spadeful on one side, the next on the other side, and so on. Now place a 6-inch layer of partly decayed manure along the trench, make it firm, and cover with about 4 inches of the top soil. This will leave only a shallow trench, but it will be deep enough. Lift the plants carefully with a good "ball" of soil and roots, and put them at 9 inches apart. Keep plants of the same size together as far as possible, water them well, and shade with shrub branches for some days if the weather is bright. Single rows are best and easiest to manage, but to economise space double rows are often planted, in which case the

trenches must be wider and a foot further apart, the plants in one row alternating with those in the next.

The earthing-up process for Celery should commence seven or eight weeks before the "sticks" are required for use; this checks growth, so the plants must be well developed before a start is made. Soak the roots with water the day previous and remove damaged leaves, etc., but the stems ought to be quite dry when the soil is placed round them. Very little soil is added the first time—about 4 inches in depth—and this is repeated at intervals of ten days, until finally the soil is banked up tidily on each side of the plants. Work the soil well round the plants, making it fairly firm, but prevent it from falling into the centres. It will be found of great help to fasten a cord to a stick at one end of the row and loop it round each plant in turn. Late crops should not be earthed up until late in the year.

For early use a white variety is generally grown, Solid White, Giant White, White Gem, and Invincible White all being excellent for the purpose. Among red and pink sorts, Standard Bearer, Giant Red, Sulham Prize, and Superb Pink can be recommended.

Cucumber. In growing Cucumbers in a frame the necessary warmth is usually obtained from a hot-bed. Fresh stable manure is necessary for this, and tree leaves may be mixed with it to increase the bulk. Throw it into a heap and turn it well several times before making the bed, otherwise too fierce a heat will result. Make the hot-bed wider all round than the frame to be placed on it. If a pit (sunken frame or glasshouse) heated by hot

water is available, a hot-bed is not necessary.

Cover the manure with a layer of loam and leaf-soil mixed, and form a mound of similar soil under each "light" of the frame. Leave enough room for the development of the leaves so that they will not touch the glass. Seeds may be sown or small plants put out in each mound of soil when the thermometer indicates that the heat of the bed is declining. Shade the plants for a few days and keep the frame closed.

The Cucumber prefers a close and moist atmosphere, but when grown in a frame it is prudent to ventilate more freely than when planted in a glasshouse. When the heat of the bed of manure declines the grower has to rely on sunheat, and must exercise care in opening and shutting the frame. By closing the frame early in the afternoon and syringing, the warmth is maintained. The plants are "stopped" regularly by pinching off the shoots beyond the fruits so that the space available may be filled with profitable growth. Weak and overcrowded shoots must be cut out and new soil should be added to the mounds from time to time. There is no need to fertilise the blossoms of Cucumbers to "set" them; this is only done when seeds are to be saved. An error to avoid is that of leaving many fruits on the plants after they have become large enough for use; cut them and place the stems in water in a cool place, and they will remain fresh for days.

In a fine, bright summer quite good crops can be grown in a cold frame with the aid of sunheat only. If the frame would otherwise be out of use the plan is worth attempting. The details already dealt with

regarding cultivation will answer for this method, but watering and spraying need to be carefully done during dull weather, or mildew will appear. The plants should not be put into a cold frame until the end of May.

Ridge Cucumbers. For an early crop the seeds must be sown in a greenhouse, and the seedlings potted to be ready for planting in May on a ridge of fresh manure covered with soil, but if a later start is made by sowing seeds out of doors manure is not essential. They must be planted in good soil in a sunny position. "Stop" the shoots once, and peg them out as they grow. Water regularly in hot weather, and the result—provided the summer is bright—will be a crop of well-flavoured Cucumbers.

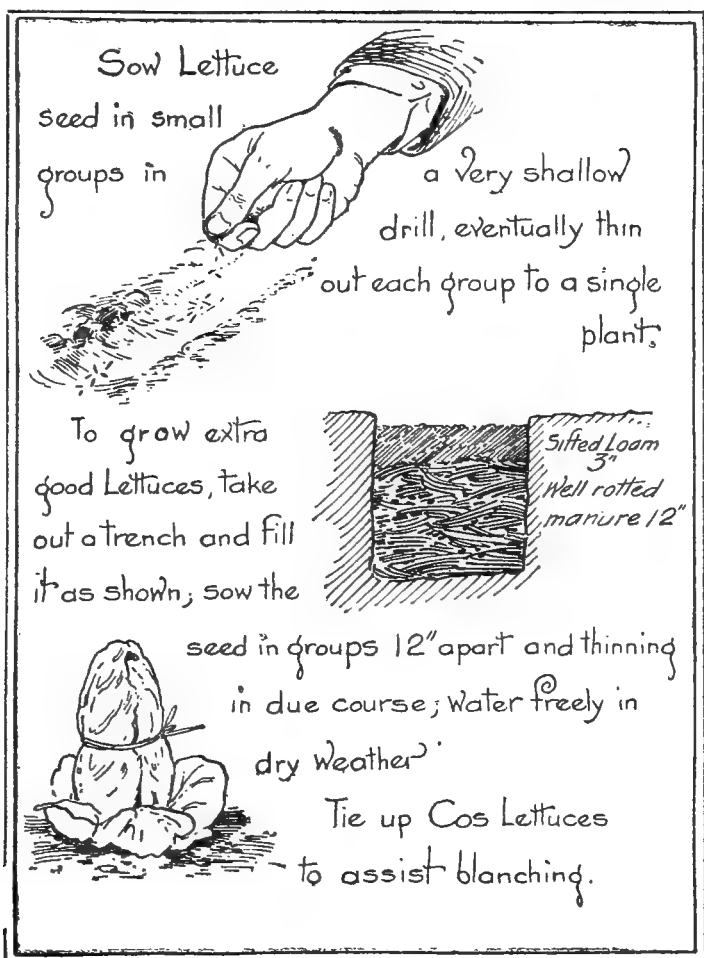
Everyday is an excellent variety for growing in the greenhouse, while Improved Telegraph and Lockie's Perfection are suitable for cultivation in a frame. Of ridge varieties King of the Ridge is not surpassed. Prolific and Stockwood are other good ridge Cucumbers.

Leek. For early use it is best to sow seeds in February, provided a somewhat sheltered spot is available. Failing this, sow as early in March as possible, making this one sowing do for the whole crop. Those who possess a greenhouse would do well to sow seeds there in a box of soil in February. When sowing out of doors scatter the seeds thinly along the drills and dust a little soot over the bed. The seeds take longer to germinate than those of many vegetables, but the seedlings usually come up in satisfactory numbers.

Undoubtedly the best method of growing Leeks is in trenches

prepared by manuring in the same way as for Celery. But excellent results can be obtained by planting in holes made on well-tilled ground, especially if feeding with liquid manure is possible during the summer. Make the trenches about $2\frac{1}{2}$ feet apart and 15 inches wide and plant 6 inches below the level. Double rows can be planted, allowing from 9 to 12 inches between the plants. In planting on the level a

dibber is used, the plants being placed at the bottom of the holes; the latter should not be filled in, but a little soil is put on the roots. The plants grown in trenches must be earthed up gradually, a little soil being added every ten days or so later on, until a sufficient length of stem is covered. The Leek differs from Celery in that blanching is done while the plant is growing, not when growth is practically finished.



When hard frost seems likely it is advisable to lift some of the Leeks and place them under shelter so that they will be available ; otherwise they may be left to be dug as required. If the ground is needed for another crop in spring before the Leeks are finished, lift the remainder and put them in the soil elsewhere, using them as is necessary.

Improved Lyon, Improved Musselburgh and Prizetaker are suitable varieties to grow.

Lettuce. Although it is possible to have Lettuces every day in the year in a well-equipped garden, in small gardens the aim is usually to maintain a supply from the earliest possible date in spring until autumn. From the middle to the end of March is a good time to commence outdoor sowings of Lettuce. Poor soil will not produce good Lettuce. Broadcast sowing is often practised, but it is best to sow in drills, and to sow thinly. If the seeds are not too deeply covered—drills $\frac{1}{4}$ inch deep are suitable—germination is usually very high. It is better to thin the plants to the required distance in the seed row—9 to 12 inches, according to the size of the variety—rather than rely on transplanting. It is unwise to transplant Lettuces in summer ; the check to growth generally causes "bolting"—otherwise running to flower instead of "hearting."

To maintain a supply it is only necessary to make small sowings every fortnight throughout the summer. If several rows are sown alongside each other let them be 1 foot apart. Thin the seedlings on two occasions, the final thinning being done when the plants touch each other.

Some varieties of Cos Lettuce need to be tied shortly before they reach maturity to ensure blanching, but there are now excellent varieties that do not need this attention, and it is as well to grow these in preference to the others.

During August and early September one or two sowings may be made, for the plants will prove most useful if they can be protected by a cold frame in late autumn. If this is out of the question, give them the best position possible, at the foot of a wall facing south for instance, watering them well until they are established.

The following varieties of Lettuce will be found excellent—Cabbage Lettuce : All the Year Round (suitable for sowing at any time), Favourite, Supreme, and Ideal, Golden Ball (for autumn sowing), and Tom Thumb and Commodore Nutt if small Lettuces are preferred. Cos Lettuce : Little Gem is a compact, small variety, and others for summer are Superb White, Mammoth White, White Heart, and Paris White. For sowing in autumn Bath Cos and Winter White are reliable.

Onion. Onions will thrive in any soil which is thoroughly prepared for them. This soil preparation is half the battle in Onion cultivation ; the roots penetrate much farther into the soil than would be supposed, and trenching is advisable. A sunny site should be selected in the autumn, and the earlier the trenching or double digging is undertaken the better. A heavy dressing of decayed manure should be mixed with the lower "spit" as the digging proceeds, for the Onion will not do its best in poor soil. If the land is heavy,

add also such materials as wood ash, sand and old potting soil.

Seeds are sown in March, out of doors, earlier or later according to conditions; some little time in advance of sowing give the bed a good blackening over with soot and fork this in. Having secured a fine surface, level the soil and make very firm on the first suitable day. Draw shallow ($\frac{1}{2}$ inch deep) drills 1 foot apart—9 inches will do for smaller varieties—and sow the seeds evenly, but not too thinly. Cover in carefully with the rake, and tread the whole bed thoroughly—a firm bed for Onions is not the least important point in their management.

If germination has been good a first thinning of the seedlings should take place when they are large enough to be handled conveniently, and all weeds growing in the lines must be removed by hand. Provided the plants are not crowding each other, it is wise to defer the final thinning as late as possible in case losses are experienced, and so that the “thinings” can be used in the kitchen.

Thorough “ripening” is essential to good keeping. First of all the tops should be laid over in late summer if the weather is keeping them green and erect. Shortly after this pull the bulbs and lay them, with their roots facing the sun, on the bed, or on a hard path. Here they will soon dry if fine weather prevails, but if rain is frequent it may be necessary to move them into a frame or under some airy shelter to complete the drying process. Finally store them in a cool and dry but frost-proof shed, “roping” them for preference. They will keep well if hung on a sunny wall.

For use during summer a sowing of Onions is made about August 10th, and again a week later. If sown too early they will almost certainly “run to seed,” therefore it is prudent to make two sowings. Sow in drills 9 inches apart in ordinary soil, and in early spring transplant the seedlings to a prepared bed, putting them 9 inches apart in lines 1 foot from each other. Otherwise the treatment is the same as for the spring-sown crop.

Those who like to grow large Onions may easily do so by sowing the seeds in a heated glasshouse in January and planting out the seedlings in April at 1 foot apart each way. The longer growing season alone will increase the size of the bulbs, and regular feeding with liquid manure will also assist. If no convenience exists for raising the seedlings under glass, it is possible to purchase them at planting time. On some soils this is the only possible method.

Pickling Onions are easily obtained by sowing one of the small varieties, such as James’ Long Keeping, thickly on poor soil in April, and not thinning the plants. Special sorts for pickling are Queen and Silver Skinned.

For ordinary culinary purposes James’ Long Keeping, Bedford Champion, and Brown Globe are three good varieties, while Ailsa Craig, Cranston’s Excelsior, and Premier are the best large Onions. For August sowing one of the Rocca or Tripoli types should be chosen, of which there are several varieties, e.g., Giant Rocca and Lemon Rocca.

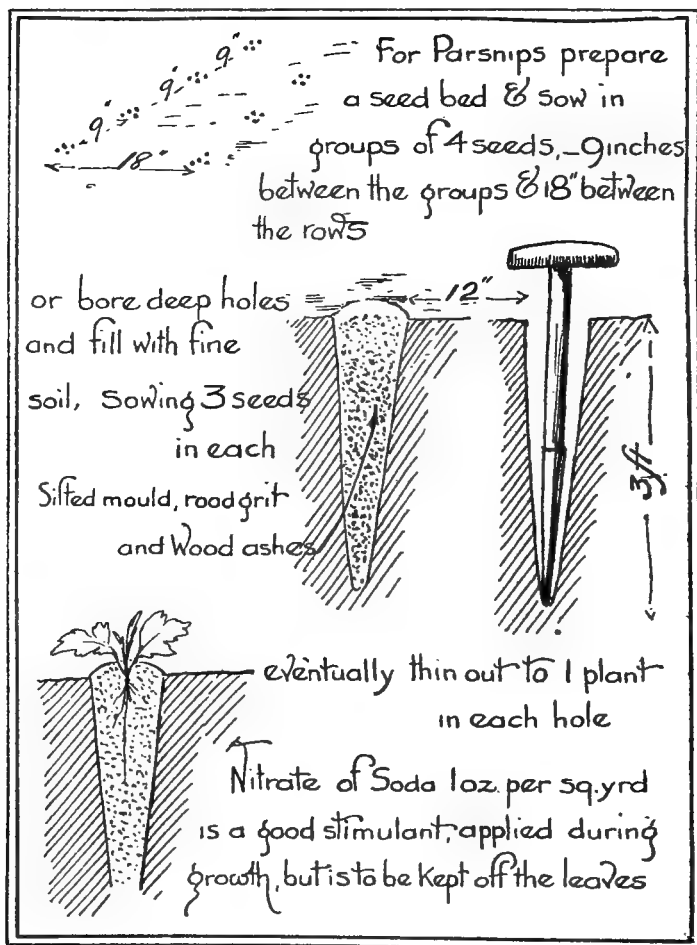
Parsnip. This may be grown on almost any land which has been dug

deeply. They prefer an open situation, and the soil that suits them best is a deep, sandy loam. Rich ground is not necessary and the addition of fresh manure must be avoided.

The seeds are sown in February or early March. Drills should be drawn along the whole length of the rows to be cropped, and the seed should be sown either evenly

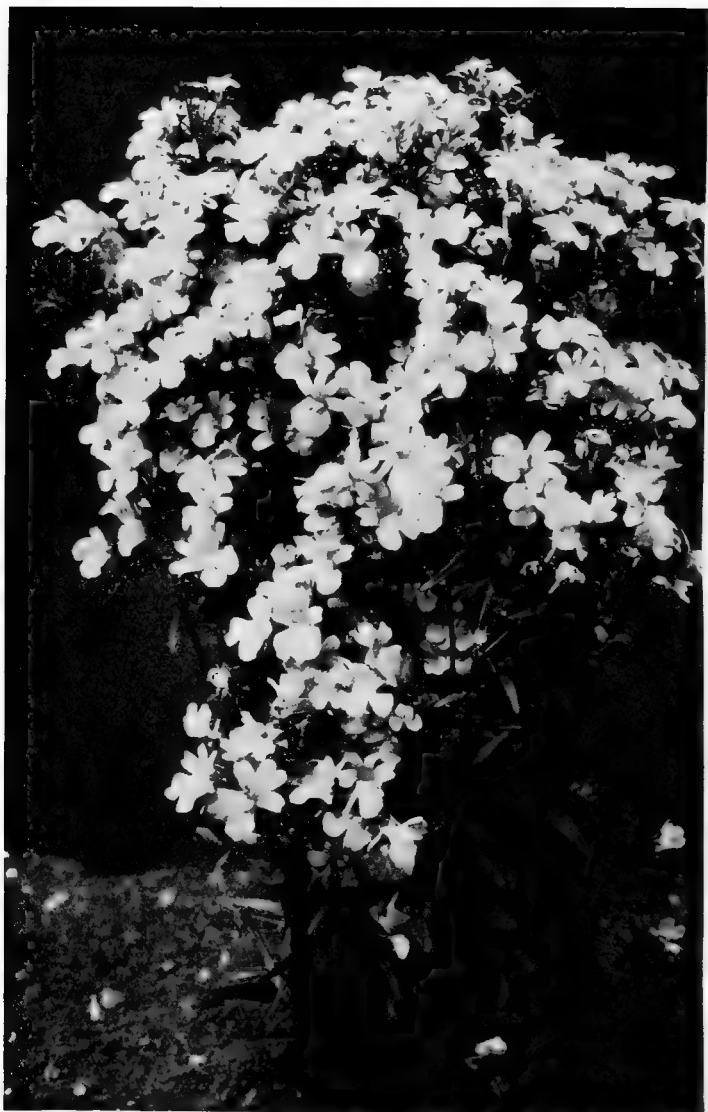
all down the drills or else in groups of 4 or 5 seeds each at intervals of 9 inches. If the former method is adopted the seedlings must be thinned out gradually until the little plants are about 9 inches apart; but if the seeds are sown in groups, all but one seedling in each group must eventually be pulled out.

Parsnips are not ready for use





Those who like tree-growing Roses which soon develop into large bushes, and bloom for months together, should plant this crimson variety named Karen Poulsen



One of the loveliest blue summer flowers, *Nemesia Blue Gem*, an annual which grows about 12 inches high and blooms profusely

until they have been in the ground for at least seven months, and unless they are wanted for some special purpose it is best to defer taking them up until the first frost has come. The roots should not be dug up all at once, but should be left in the ground during the winter, and only taken up as required. The Student and Tender and True are popular varieties.

Peas. To grow Peas really well the ground ought to be dug two spits deep. Maincrop and late Peas need rich soil, and the plan of preparing special trenches for them, with manure at the bottom well mixed with the soil, is a good one. Lime is essential to Peas, and if there is any doubt about its being present in the soil apply a dressing of quicklime in winter.

Sowing in Autumn. If a dish of Peas is wanted as early as possible it is usual to sow a round-seeded variety—on account of its hardiness—in November or January. Short rows are sown on a south border, with sufficient space between them for a few rows of early Potatoes later on. As Peas sown in winter have to stand much bad weather and losses are almost certain to occur, some allowance for this must be made by sowing fairly thickly. There is seldom more than ten days' difference between Peas sown in November and others sown between then and early February, but if dry weather sets in in May, those sown earliest are usually most successful.

Sowing in Spring. The next sowing should be got in as early as is practicable in March, choosing one of the Marrowfat varieties.

Successional sowings are made at intervals of two or three weeks from March to June. To maintain a

constant supply it is necessary to sow another row just as the last one appears through the soil. All the spring sowings should be on deep, well-manured soil, and overcrowding must be avoided. The seedlings should be thinned to 4 inches apart.

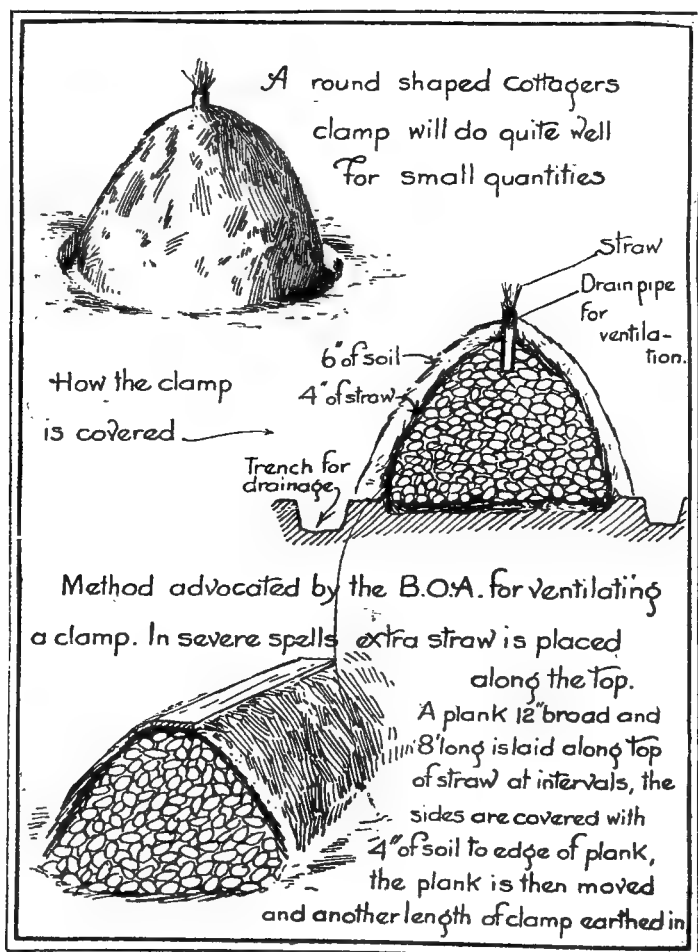
Peas must be adequately supported. Hazel sticks are good, but other kinds are often used with satisfaction for one or two seasons. They should be twiggy and of such a length that when pushed firmly in the ground the tops will be higher than the Peas when these are fully grown. Shorter, twiggy sticks should always be used first, as this enables the plants to start climbing early. It is a mistake to insert the sticks so that they slope inwards at the top; the tops ought to incline outwards.

For sowing in November or between then and February, Improved Pilot, 4 feet, is one of the most reliable hardy varieties. Good, early, low-growing sorts for spring sowing are Pioneer, 2 feet; Little Marvel, 2 feet; William Hurst, 15 inches; and English Wonder, 2 feet. Taller varieties are Gradus, 3½ feet; Early Giant, 3½ feet; May Queen, 3 feet; and Duchess of York, 3½ feet. Second early varieties, 2 feet high, are Supreme and Stratagem. Duke of Albany, 5 feet, is a first-rate tall variety. For successional crops, choose from Peerless, 3 feet; Senator, 3 feet; and Sutton's Perpetual, 4 feet; or Ne Plus Ultra, 5 feet, if its height is no objection. Finally, Autocrat or Gladstone, 4 feet, and Veitch's Perfection, 3 feet, are valuable for sowing in May to provide a late crop. A final sowing may be made early in June if necessary.

Potato. Although there are certain soils which suit the Potato better than others, the fact that it is grown in every district and on every kind of land in the country proves that it is not over-fastidious in this respect. It thrives better in rather light than in heavy land, provided it contains sufficient humus or decayed vegetable matter and does not dry out rapidly. A good crop

cannot be produced in very poor soil, but, on the other hand, excessive manuring is equally bad. Lime is essential, and land must not be deficient in this ingredient.

Seed Potatoes. There is no doubt that the selection of the "seed" or planting tubers is one of the most important points in Potato cultivation. The wisdom of getting fresh tubers for planting every other year



cannot be questioned; in fact, many growers change their "seed" annually—that is, they buy the tubers from a distant and preferably later district. If tubers for planting are to be saved from the home-grown crop, the time to select them is while the crop is being lifted and not later from the store. The "seed" tubers can then be taken from plants which are healthy and have cropped well; those true to type should be chosen, about the size of small hen's eggs. Leave the selected tubers on the ground for a time, and when thoroughly dry put them away in a cool but frost-proof shed for the winter. In January the tubers of early varieties should be placed in shallow boxes "eyes upward," in a light position, to encourage the formation of sturdy shoots; later on, the second early and main crop varieties should be spread out thinly in a light position for the same purpose. If the tubers have sprouted or started into growth by planting time they will have an advantage over those that are dormant; tubers so treated bear heavier crops.

When to Plant. It is impossible to say what is a safe date for the first planting; it must be decided by the man on the spot; usually it is late February or early March. A sunny, sheltered spot is best for the earlier crop.

Draw the drills about 6 inches deep and 2 feet apart, and let them run north and south. Place the tubers 4 inches deep and from 10 to 12 inches apart, and scatter a little leaf-soil or decayed manure between them. Cover carefully to avoid breaking the shoots. As the tops break through the soil cover them with fine soil from between the rows,

and repeat this often. A very light covering of straw or bracken will prevent damage by frost.

Successional plantings of early varieties can be made with less risk, and there will be no need of protection.

Second early Potatoes are heavy croppers, and are ready for use some time in advance of the main crop. They should be planted in the open garden in March, 15 inches apart in drills from 2 to 2½ feet from each other: they can be lifted and stored in August.

Main crop Potatoes are the most important crop in the garden. March and April are the planting months. The tubers should be from 15 to 18 inches apart and the rows 2½ feet or even 3 feet from each other. Hoe between the rows several times, commencing as soon as the tops are clearly seen, and when the Potatoes are 6 inches in height earth them up a little, completing this work a few weeks later by bringing the soil to a sharp ridge. Before earthing up Potatoes a light sprinkling on the soil of 2 parts of superphosphate of lime and 1 part of sulphate of ammonia in mixture will prove very beneficial; this mixture should not be scattered on the leaves.

Little more attention will be needed until the crop is ready for lifting. When the common Potato disease or "blight" is prevalent it is better to lift the crop as soon as the stems have died. Choose fine weather for the work so that the Potatoes may be stored dry, and select the "seed" tubers at the time of lifting. Store the large Potatoes separately, being careful not to include any that are diseased. A dark, cool, frost-proof shed is an

ideal store, but a "clamp" out of doors is also excellent.

Some of the Best Potatoes. Early : Witch Hill, May Queen, Immune Ashleaf. Second early : Arran Comrade, King George, Great Scot. Main crop : White City, The Bishop, King Edward VII., Ben Cruachan, Arran Consul.

Salsify and Scorzonera. These root vegetables need similar treatment and so may be included under one heading. Neither can be described as popular, but amateurs who have not tried these vegetables should certainly grow a small quantity. Deeply cultivated soil is necessary, but at digging time no manure should be added, unless it can be placed at the bottom of the second "spit." Towards the end of April seeds are sown in drills $\frac{1}{2}$ to 1 inch deep at a distance of 15 inches from each other ; they need only be lightly covered.

As soon as the seedlings are through, thin them to about 3 inches apart ; before they become very large the final thinning should be done, the plants being left at a foot apart. Scorzonera is ready for use in September, at which time a few roots may be lifted. It is advisable to take up only sufficient to meet immediate requirements, leaving the remainder to be dug as wanted.

Salsify becomes ready for lifting in November, when a portion of the crop can be stored in sand in a cool shed. Further batches can be stored as becomes necessary. Care should be taken in digging up the roots, otherwise they will be damaged.

Chards are obtained by leaving Salsify roots in the ground through the winter until the flower stems,

which are produced in the second season, are about 5 inches in length. These are then cut and cooked in the same way as Asparagus. Most seedsmen have their own particular strains of these vegetables.

Savoy Cabbage. The Savoy Cabbage is a much-prized vegetable that is ready for use in autumn and winter. It is of easy cultivation. It is better to make several small sowings than to put out plants from one sowing only. For early cutting make a first sowing in March on a reserve bed. The soil should be made firm round the roots when planting takes place in July. Small sorts need be no more than 12 inches apart, while double that distance will be needed for the very large kinds.

Further sowings are made in April and May, as deemed necessary, and the resulting plants should be moved to their permanent quarters as early as possible. In very few gardens can a special plot be reserved for the required number of plants, and recourse is usually had to planting between early Potatoes.

Tom Thumb, Earliest of All, and Early Ulm are excellent small varieties. Among the larger varieties, Selected Drumhead, Dwarf Green Curled, Best of All, and Late Drumhead form a good selection.

Spinach. Room should be found in the smallest garden for Spinach, for it is one of the most wholesome vegetables. It is not at all difficult to grow, but to keep up a regular supply needs care, especially during hot weather. As Spinach does not occupy the ground long it is often grown as a catch-crop. Large sowings are not advisable ; it is not a

vegetable that stands long once it is ready for use, therefore seeds should be sown frequently.

Sowings made early in March generally prove satisfactory. Let the drills be 1 foot apart. It is usually possible to find sufficient room between rows of Peas and Beans. In the summer the slight shade afforded by these crops is beneficial to the Spinach. Thin sowing and early thinning are important points; on well-tilled soil the plants should be 9 to 12 inches apart. Sowings which have to stand the heat of the summer are best made in moist and partly shaded positions. All the sowings made between January to July are of the round or summer Spinach.

In July, August and September the prickly kind is sown for use in the winter and spring, as it is rather hardier; not so hardy, however, that it does not suffer in very bad weather in winter. Therefore part of the winter crop should be grown on a sheltered, sunny border.

New Zealand Spinach is a different plant altogether from the ordinary Spinach, but it is an excellent substitute, especially on hot soils where the true Spinach quickly "bolts to seed." The plants are usually raised under glass in spring and planted out from the middle to the end of May, as they will not stand frost. As an alternative they may be sown outside in May. New Zealand Spinach is of spreading growth; the plants ought to be 3 feet apart. There is no need to plant many, as the leaves are freely produced; the tips of the shoots are picked for use.

Perpetual Spinach. Another substitute for true Spinach, and one more often seen, is Perpetual

Spinach, or Spinach Beet. The roots are of no value. It cannot be considered equal to the real Spinach, but it often proves valuable when the latter is not available. Ground deeply dug is suitable for it encourages free leaf growth. Two sowings will be enough—one in March and another in July, the latter to stand through the winter. Thin the plants while small to 9 inches apart, and when the leaves are of a size for gathering they should be removed, even if not wanted in the kitchen. This ensures continued growth of foliage. When the plants "run to seed" dig them out.

Varieties of the real Spinach are few. The Victoria is a popular sort which may be sown at any season, while of both the round and prickly kinds seedsmen have their own special strains.

Tomato. To raise Tomato plants from seeds and grow them to planting size needs artificial warmth. The middle of February is a suitable time to sow. A temperature of 55 degrees by night with a rise of 5 to 10 degrees by day will suit them. Pots, pans or boxes may be used for the purpose. After draining them with crocks, fill to within $\frac{1}{2}$ inch of the top with sifted compost consisting of loam, leaf-mould, and sand. Press it down lightly, make the surface fairly level, and immerse the pan or box of soil in water almost to the surface. When the surplus water has drained off the seeds may be sown. In moistening the soil always use lukewarm water. When two or more true leaves (apart from the seedling leaves) have formed the seedlings will need transplanting. They are best moved into small pots, but may

be put into boxes at 2 inches apart if this is most convenient. A similar compost to that used for sowing will be suitable. Keep the plants on a shelf where they obtain full light. The ventilators should be opened every day in mild weather.

In a short time the roots will show round the sides of the pots, and the plants must then be moved into 4-inch pots. For this potting use a greater proportion of loam than hitherto, and add a little wood ash. Pot fairly firmly. A further repotting into 6-inch flower pots will be necessary in due course, adding a little well-decayed manure to the compost, and pot firmly to ensure short-jointed growth.

Planting must take place as soon as the pots are filled with roots. Pots, boxes, or beds of soil are suitable, the two first mentioned being usually preferred. The compost used now is very important. The main ingredient is fibrous loam; three parts of the compost should consist of this. One part of well-decayed manure from an old hot-bed is excellent; leaf-soil, however, is a good substitute, and more easily obtained. Add coarse sand freely; if with each bushel of soil is mixed a 5-inch potful of superphosphate of lime, and plenty of wood ashes from the garden fire, a suitable compost will result.

Make the soil very firm, and water it immediately after planting; also place a stake to each plant long enough to support its full height. The sticks must be tied to a wire at the top to keep the plants from falling over when they become heavy.

After a day or two ventilate the greenhouse freely on all favourable

occasions. Artificial aid will be needed to fertilise the first blossoms, though later no such assistance is necessary. Merely touching each blossom with a rabbit's tail when the sun is bright will distribute the pollen, though tapping each plant is often sufficient. It will be found that those plants growing in 10-inch pots will dry more rapidly than others in boxes, while if the plants are in beds and borders less watering will be needed.

Tomato plants are sometimes grown with two stems, but the single stem method is more usual, all side growths being removed when quite small. A warm, dry atmosphere with abundance of air is necessary to successful Tomato cultivation. Superphosphate of lime is an excellent fertiliser for Tomatoes; a handful may be mixed with 3 gallons of water every three weeks.

If the foliage is very luxuriant, or if the plants are crowded, those parts of the leaves which shade the fruits may be removed with advantage.

For Planting Out of Doors. To raise plants for planting against a sunny wall or fence out of doors, seeds should be sown in a heated glasshouse early in March and the plants grown as directed. By the end of May they should be sturdy plants well established in 5-inch pots, each possessing a bunch of flowers. They must be hardened off in a cold frame before being planted out of doors. If the plants are grown in a cold greenhouse the same methods of cultivation are followed as in a heated house, except that due allowance is made for the fact that sun-heat has to be depended upon in

maintaining the temperature. By closing the ventilators early in the afternoon a severe fall in the temperature at night is avoided.

In planting out of doors in early June, do not make the soil too rich; feeding after the fruits commence swelling will be better. Usually not more than four bunches of fruit will ripen on each plant out of doors; often the latest ones have to be picked before they are fully coloured and ripened in a box indoors. In a wet season the out of doors crop will be worth very little, but in a hot, dry summer the results are very satisfactory.

Many excellent varieties are catalogued by the leading seedsmen. For cultivation under glass a selection can be safely made from Radio, Kondine Red, Best of All, Champion, Earliest and Everyday. For outdoor cultivation choose from Sunrise, Holmes' Supreme and Open Air, Princess of Wales, and Outdoor. Those who like to grow the yellow-fruited varieties will find that they do best in the greenhouse. Golden Nugget, Golden Sunrise and Sunbeam are some of the best.

Turnip. Seeds may be sown on a sheltered border in February to provide early roots. Rake the soil down finely and draw drills a foot apart. Thinning must begin as soon as the rough leaves are formed, and before crowding takes place the final thinning should be carried out, leaving the plants 9 inches apart. Turnips must be grown quickly to be palatable, and to assist growth a little patent manure is often sprinkled in the drills previous to sowing.

Successional sowings may be made during March, April, and May, according to the demand, choosing

a position in the open garden. In May it is necessary to select cool and shady spots in which to sow, and to make several small sowings at short intervals rather than one large sowing. In July and August the autumn and winter crops are sown, again at intervals according to demand.

For sowing early the following varieties of Turnip can be recommended: Early Snowball, Early Model, White Gem, Early White and Early Red Milan. For summer use these together with Red Globe and Green-top White are suitable. For later sowings, Prizetaker, Golden Ball and Chirk Castle are reliable, the last named being exceptionally hardy.

Garden Swedes are grown in the same way as Turnips except that they are not sown until late in May or in June. They stand severe weather better than Turnips, and a few should be grown.

Vegetable Marrow. The Vegetable Marrow will not withstand the slightest frost; therefore plants are usually raised under glass, singly in small pots, early in April. The seedlings should be placed in a light position as soon as they germinate and moved into larger pots when they need it. They should be well established in 5-inch pots by planting time.

It is neither necessary nor desirable to grow Vegetable Marrows on a manure heap. Good soil is essential, therefore a certain amount of manure must be provided, but it should be partly decayed. Although the plants can be used to hide any unsightly rubbish heap and planted on top of it, they do just as well planted on the level.

During summer Marrows must

have abundant moisture at the roots; and artificial watering is generally necessary in continued dry weather. When the plants are bearing fruits freely, weak liquid manure will help them. As a general rule it is not necessary to "stop" the shoots at all; the plants usually branch freely and bear well. Occasionally, however, it happens that a plant fails to produce fruits, and pinching out the points of the main shoots is necessary. Seeds may also be sown out of doors early in May where the plants are to grow.

If a small Marrow is appreciated, Table Dainty and Rotherside Orange should be tried. Long Green and Long White are well-known sorts of the larger type, and Moore's Cream and Pen-y-Byd are two old varieties still worth growing. Tender and True is one of the best Marrows of the Bush type.

A Few other Vegetables. Cardoon is grown for the sake of the midrib of the blanched stems. Seeds are sown in pots of soil in a frame in April, the seedlings being planted out of doors in deep rich ground in early summer. In September the stems must be blanched by first wrapping haybands round them and then earthing up with soil; the produce will be ready in nine or ten weeks after the plants are earthed up.

Celeriac or Turnip-rooted Celery is cultivated for its large turnip-like root. The seedlings are raised in a frame in March and planted out in June at 8 inches apart in rows 12 inches from each other. This vegetable needs moist soil and watering will be necessary in hot, dry weather. The roots are lifted in autumn and stored in soil.

Chicory is grown for the blanched shoots which develop from the roots in winter and spring if a suitable temperature is maintained. The seeds are sown out of doors in May in rows 12 inches apart, and the seedlings thinned to 8 inches from each other. In late autumn, winter, or early spring the roots may be lifted, placed in boxes of soil, and forced gradually into growth in a shed or greenhouse; darkness is essential. A simple method is to cover the box with another one, inverted, or a few roots may be placed in a large pot of soil, another pot being placed over it. Slight artificial warmth will ensure earlier produce. The soil in the pots or boxes must be kept moist.

Endive. This autumn and winter salad is raised from seeds sown in August in drills 12 inches apart; the seedlings are thinned until they are 6 inches from each other. When they are of useful size the plants are blanched; this is done by covering them with flower pots.

Radish needs rich soil so that it may develop quickly; otherwise it will lack flavour. Decayed manure or leaf-mould should be added to the ground. Small sowings are made from March to May.

Shallot. The bulbs are set in the soil at 6 inches apart in February or March in rows 9 inches from each other; they need only be half covered with soil. When the leaves turn yellow the bulbs are lifted, dried, and stored.

Kohl Rabi. Sometimes grown as a substitute for Turnip in summer. Seeds are sown in rows 15 inches apart in April, the seedlings being thinned to 6 inches from each other. The roots should be used before they become full grown.

Pests and Diseases of Vegetables

APHIDES. Green, brown, or black flies, of small size but always in great numbers, infest various crops. Spray with soapy water or with paraffin emulsion, made as follows: Dissolve a handful of soft soap in boiling water. Add a wineglassful of paraffin and 2 gallons of water. Keep well mixed. Pinch off the tops of Broad Beans which are infested and burn. Feed plants to urge them into growth again after an attack.

Asparagus Pests. Red and yellow beetles, as well as a small, spotted fly, breed maggots, which feed on the foliage or burrow into the thick, juicy stems. Put pieces of fly-catching paper here and there to catch the flies in spring, and burn infested tips. For the beetles, spray with a nicotine wash in mid-summer. Apply kainit to the soil in autumn, 4 oz. per square yard.

Cabbage Caterpillars. Large-sized and brightly-tinted caterpillars breed from eggs deposited by white butterflies and moths; all of them feed on the succulent leaves or burrow into the heart of the plant. Apply soot to the young plants and handpick the pests when they are large. Syringe with salt water. Apply a soil fumigant in winter, when digging.

Cabbage Gall Fly. This fly breeds a small white maggot which

causes galls on the roots of members of the Cabbage tribe. Cut out these galls and burn them; keep the seedling bed well dusted with soot.

Cabbage Root Fly. A fly lays her eggs alongside young Cabbage and similar plants; the eggs produce white maggots, which gnaw the roots badly, and the plants are ruined. There is no cure for a badly-infested plant; pull it up and pour some paraffin oil or disinfectant solution on the ground. Moisten sawdust with paraffin oil or special disinfectant and scatter it round young plants, or procure special felt discs for the purpose.

Carrot Fly. The maggot which this fly breeds attacks the roots of young Carrots during summer, and ruins them completely. Keep the soil alongside the plants firm by tramping; use soot freely on the young plants, and employ the paraffin-sawdust mentioned above. Carrot beds should always be treated with disinfectant or soil fumigant beforehand to sterilise them.

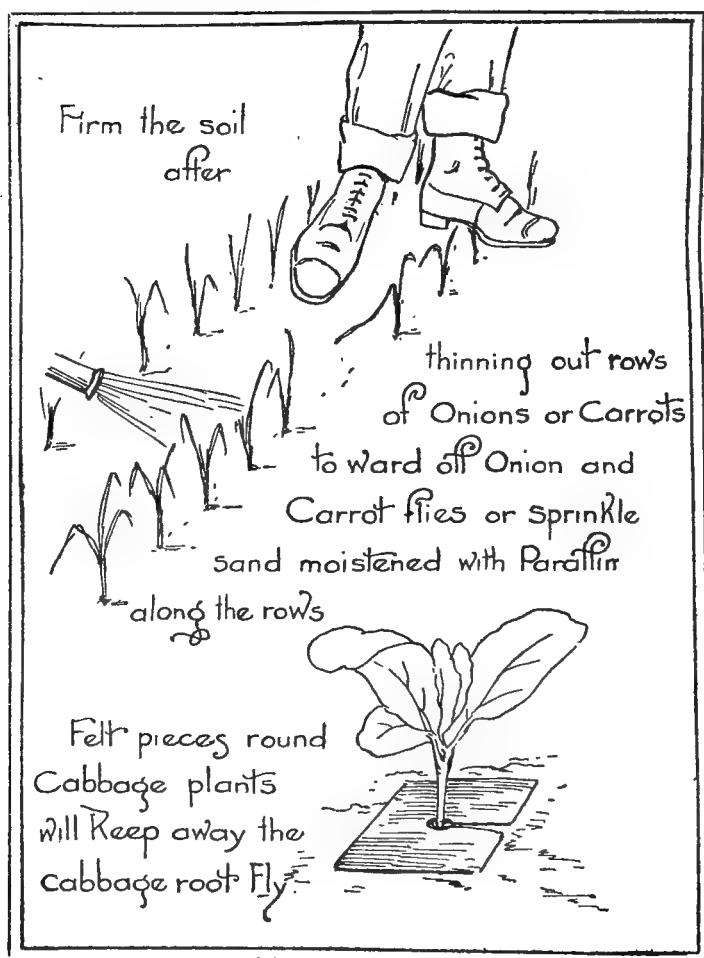
Celery Fly. The blisters and blotches which appear on the leaves of Celery plants contain maggots, which eat out the soft internal tissues; this naturally acts as a check on the plants. Pick off and burn the worst leaves; pinch other blisters between finger and thumb and spray the plants occasionally

in summer with insecticide to keep the parent flies away from them.

Eelworm. Eelworms are tiny creatures which cannot be seen without a microscope. They attack the roots of Cucumbers and Tomatoes, very often causing the formation of root swellings and knotted, distorted growth. The real remedy is to sterilise the soil beforehand ; occasionally watering with a

rose-red solution of permanganate of potash acts as a cure, but only in the initial stages, as badly-infested plants cannot be cured ; the pest infests the root tissues of the plants.

Manure Worms. Farmyard manure may be infested with white grubs or worms, and these may eventually do harm to crops. Spread the manure out thinly and spray with 1 pint of ammonia in



5 gallons of water or formalin at the same rate, or strong household disinfectant; pile up the manure again, and let it stand for a day or two before use.

Mice and Rats. These may eat newly-sown Peas and Beans or do harm to roots in storage. Trap them or use a suitable poison. Before sowing Peas or Beans moisten them with oil and dust red lead over them; or fill in the seed drill with some gorse before the seeds are covered.

Millipedes. These creatures attack roots of all vegetable plants, but particularly Potatoes. Mix together 1 stone of lime and 1 lb. crude naphthaline; apply this before cropping. Traps consisting of partly-scooped-out Potatoes should be set and examined regularly.

Onion Fly. This pest attacks the young Onion plants. Employ the same remedies as for Carrot fly. Roll the Onion bed firm before planting or sowing seed.

Pea and Bean Weevil. This pest feeds at night and hides during the day; the plants are noticed to be badly gnawed, and no pest can be seen. Spray with arsenate of lead, nicotine, paraffin emulsion, or other insecticide every evening for a week. Dust soot alongside and hoe it in.

Slugs and Snails. Use soot freely, scatter little heaps of poisoned bran or a mixture of kainit, 1 lb., and bluestone, 4 oz., thinly about the ground. Powdered alum, sharp coke breeze, barley awns, lime dust, and various other things are moderately effective. Always set traps consisting of Lettuce leaves, and examine these every moist night. Drop the slugs in salt water. Do not allow plants and other rubbish to lie about the garden.

Turnip Flea. An active, small pest which gnaws holes in the leaves of seedling Turnips and Cabbages. Spread some thick oil or tar on a paper and draw it lightly, tar side down, over the plants. Spray with paraffin emulsion or other insecticide; keep the soil moist, and give an occasional dose of nitrate of soda, $\frac{1}{2}$ oz. in 1 gallon of water, to urge the plants past the seedling stage.

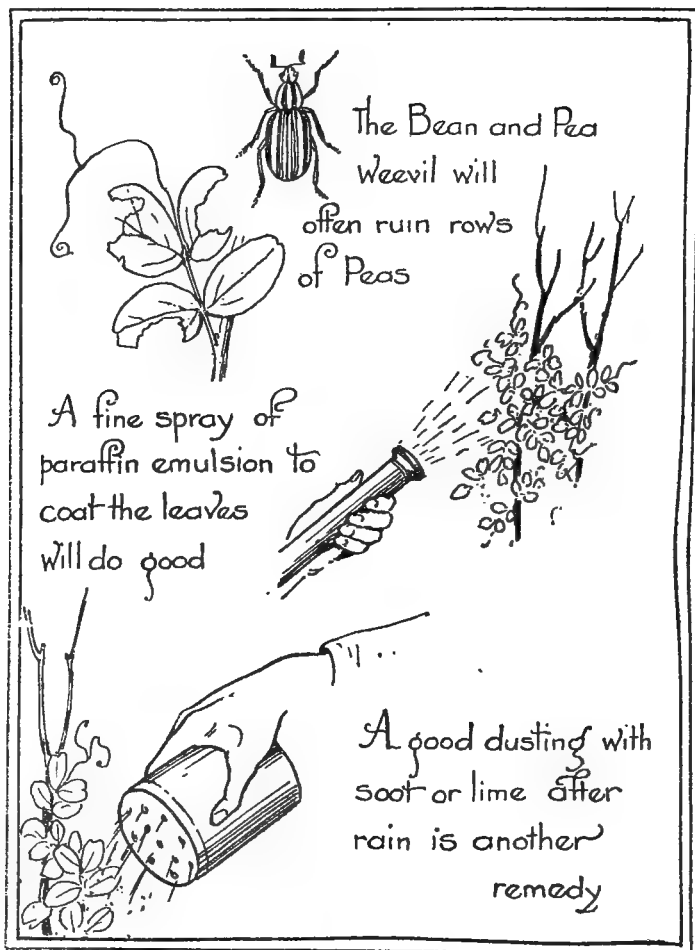
Wireworm. To get rid of this pest cultivate the ground thoroughly, apply lime, and set traps of pieces of Potato: these are placed an inch below the soil, small sticks being attached to them.

Woodlice. In the vegetable garden and in storage cellars use powdered borax to kill these pests. Dust it where the pests are found. Also employ traps, consisting of dirty pieces of board or inverted dirty pots, to catch them.

Diseases of Vegetables. Asparagus Rust may affect the foliage and stems of strong-growing plants and ruin them unless they are sprayed with liver of sulphur, 1 oz. in 3 gallons of water.

Club, or Finger and Toe, is due to a soil fungus which attacks the roots and produces a curious malformation. Infested plants seldom succeed, and they should be burnt. The fungus increases rapidly in an acid, sour soil, but is eradicated by a heavy dressing of lime, say, at least 1 lb. per square yard. Fresh quicklime should be used. As a further precaution it is wise to grow the crop elsewhere for several seasons. The disease may also infest Turnip, Wallflower, Stocks, and all members of the cruciferous order of plants.

Celery Blight and Celery Leaf Spot are foliage diseases. To cure



the plants, first of all nip off the leaves which are badly infested and spray with a fungicide twice, at an interval of five days. Bordeaux Mixture is very good.

Mint Rust soon ruins a clump of this plant. Root up, burn, and plant fresh stock elsewhere.

Onion Mildew appears first as a yellowing of the foliage, followed by the development of a greyish-

white mould. Burn the worst plants, but sprinkle the others on a dewy morning with a mixture of equal parts of lime and sulphur. Onion Smut is a black fungus cured in much the same way. Onion White Rot ruins the bulbs, covering them with a felted mass of mould (Mouldy Nose) and causing them to decay very quickly. There is no cure; pull up the infested bulbs

and burn; sterilise the soil in autumn and grow Onions in another part of the garden.

Parsnip Root Rust is familiar as a rusty growth, mainly round the top of the root, with decay of the flesh underneath. A little sulphur scattered over the soil when the seed is sown secures immunity; it is doubtful if infested plants can be cured.

Pea Mildew is usually found on late Peas. Liver of sulphur, 1 oz. in $2\frac{1}{2}$ gallons of water, will probably cure it, but dull, damp weather, the main cause, often causes it to return. Burn the haulm.

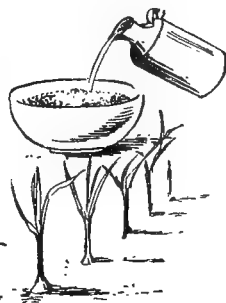
Potato Scab. Worst of all is Black Scab or Wart, which causes eruptions on the tubers, with a peculiar cauliflower-like appearance, at first white, latterly black.



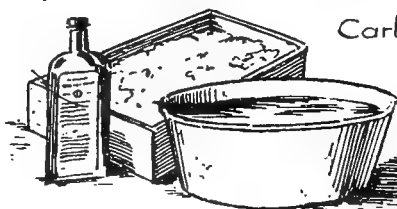
The Onion fly if left

unchecked is
often most destructive

Moisten some sand or ashes
with paraffin & sprinkle along
the rows especially after
thinning out



$\frac{1}{2}$ pt Carbolic acid, $\frac{1}{2}$ lb quicklime 12 galls. water



Carbolic Emulsion

sprayed on the
ground will also
Keep away,

many celery, onion, or carrot flies.

This dreadful disease ruins a crop quickly. Always grow immune varieties. Brown Scab affects the skin and destroys the flesh immediately underneath. This spoils the appearance of the tubers and causes much loss at cooking time. Burn the peelings; grow Potatoes in fresh soil; do not select "seed" from infested lots, and dust doubtful tubers before planting with sulphur, or scatter this in the trench. Doubtful "seed" may be pickled before planting in formalin solution for several hours, $\frac{1}{2}$ pint formalin in 15 gallons of water.

Potato stem diseases, like Collar Rot and Black Leg, infest the stems mainly but ruin the plants; growth is stunted, and the tubers are small. Avoid taking "seed" from infested plants; in fact, it is a wise plan to dig the stunted plants up beforehand and to use or burn the small tubers.

Potato leaf diseases include Leaf Curl, Mosaic, and Blight. The first two cause stunted growth, as in stem diseases, and the practice should be exactly the same as advised in the preceding paragraph. Blight, or Potato Disease, is universal; it manifests itself in brown patches on the leaves, but a delicate white mould can also be seen underneath. It spreads rapidly in warm, moist weather; soon the whole plant collapses and smells badly. The tubers show this disease as purple blotches, and they

decay rapidly. Bordeaux Mixture is a standard remedy; the plants are sprayed in summer whenever the disease is first noticed, from above and from below.

Tomato leaf diseases are many, but the commonest of all is Spot. Yellow blotches or spots appear, the leaves eventually fail to function properly, and the plants wilt badly. Pinch off leaves badly infested, and spray to prevent the trouble spreading. Give less water than normally, have the fire going in damp, muggy weather, and ventilate thoroughly. Mosaic is a disease producing a peculiar marbling of the foliage. Rust causes the usual rusty patches on the leaves and distorted growth. In both cases adopt a similar procedure. Potato Disease may also infest Tomatoes, appearing as dark, watery spots on leaves, stems, and fruits. Spray with Bordeaux Mixture, repeating this ten days later.

When attacked by Sleepy Disease Tomato plants fail to develop properly and cease growing. Root up and burn. When plants have a deficient supply of water at the roots, and the sun shines strongly upon them, Sunscald may be the result. Cracked fruits are due to intermittent and irregular growth, which, again, may be caused by changeable weather, or by irregular feeding or watering on the part of the grower.

CHAPTER 60

Pests of Fruit Trees

AMERICAN BLIGHT, or Woolly Aphis, is a pest which is recognised by the woolly covering or cotton-like growth with which the insects cover themselves on the trees. Apple and Pear trees are attacked, and the insects pierce the bark and suck the sap, the result being that affected branches become weak and unhealthy, and, if the blight is allowed to remain, ultimately wither away. Steps to exterminate the pest should be taken immediately its presence is observed. Scrape off and burn the woolly growth and loose bark, and afterwards coat the affected plants with a strong soft soap lather to which a little paraffin has been added. In winter spray the trees with one of the tar-oil washes.

Aphis, or Fly. The young shoots of fruit trees, especially of Cherry and Plum growing against a wall, suffer from the attacks of greenfly very considerably, and unless the pest is checked it increases to such an extent as to ruin the growth of the trees. It is important to take measures to kill the aphis as soon as it is noticed. The tops of shoots already badly infested ought to be cut off and burnt, and the trees should be syringed with the following solution : Dissolve 1 lb. of soft soap in a little hot water and make up to 2 gallons with further hot water, then add a wineglassful of

paraffin. The mixture must be kept well mixed when in use by returning a syringe to the can occasionally, otherwise the paraffin remains on the top. This mixture is most effective when hot water is used ; it will not harm the trees, for by the time the spray reaches the leaves it will have lost some of its warmth. Aphides cannot be got rid of by the use of insecticide on one occasion only ; the spraying or syringing must be carried out two or three times at intervals of two days or so.

Apple Sucker. Nearly everyone nowadays knows something of this pest, but those who have not yet experienced its ill effects upon their trees may one day wonder why the trusses of bloom on the trees have turned brown and have set no fruit, and they may be surprised to find the flowers come away in their hands from the trees when touched, as though dead. When these symptoms are found an examination will most probably disclose a number of whitish-yellow insects clustered around the footstalks of each flower, and from these exudes a sticky fluid. The grower will then realise that his trees are suffering from a serious attack of Apple sucker. Spraying has been advised to kill the females in the autumn. The trees should be sprayed with a tar-oil wash in winter.

Apple Sawfly. The larvae of the Apple sawfly often make sad work amongst crops of Apples, the loss of fruit in some cases being very considerable. This pest is not always easily recognised, as the injury caused by it to a great extent resembles that resulting from the presence of the Codlin moth. The eggs of the sawflies are deposited on the Apple blossom, and after an interval of a few weeks young larvae hatch out, bore their way into the fruit and eat the inside. The larvae of the sawflies enter the fruit from the side, whereas the larvae of the Codlin moth enter through the eye and bore through the core. After a month or six weeks the grubs become fully fed and leave the fruit and tree, and spin cocoons in the soil. The attacked Apples rarely grow to any size and invariably fall off. All fallen fruit and also fruit on the trees which is seen to have been attacked should be destroyed, whilst the pupae resulting from the cocoons in the ground should be also destroyed by the application of a soil fumigant. It is also advisable to dig and work the soil under the trees to enable birds readily to get at the pupae which may be exposed. A dressing of kainit will often be found to do good.

Apple Blossom Weevil. The grub of the Apple blossom weevil often plays great havoc in gardens. The egg of the weevil is laid in the flower bud and the blossom is destroyed by the larva or grub. The larva pupates within the bud, and subsequently the beetle emerges through a hole made in the side. The weevils pass the winter on the trees, hiding under rough bark and in other likely places, and many may be killed by spray-

ing the trees with a tar-oil wash. All weeds round about the base of the tree must be removed, and a slight sprinkling of gas lime in autumn, on the soil near the tree, is advisable.

Black Currant Gall Mite. This causes big-bud disease of the Black Currant, which has spread all over the country, and the damage done has been so great in some districts that Black Currant growing has ceased. The disease is caused by the presence in the buds of mites of the species *Eriophyes ribis*. As a result of the irritation caused by the presence of the mites and the punctures of the young leaves by the mandibles of mites in their feeding, the buds swell greatly and become rounded in shape. If the buds are badly infested by the mites then neither leaves nor flowers develop. The buds remain unopened, and after retaining their green colour for a time, dry up and become brown. Buds containing a smaller number of mites may burst at the proper season, but the shoots and leaves and bunches of bloom are dwarfed, and growth is weak.

The mites feed and shelter in the buds over winter. In a forward season and from buds that may have been only partially infested, the mites may leave their hiding-place in March and infest other buds. The real migration commences about the middle of April and is over by July. These migratory mites are adults, and, entering new buds, make their way inwards. Then the females proceed at once to lay eggs. The eggs hatch in due course, and the buds show at the end of August and in September the characteristic swollen appearance. Egg-laying

during the winter is practically nil, but eggs have been found in all the months of the year.

The mites are practically unassailable in the buds, therefore the migratory period is the time when treatment, to be successful, should be given. Hand-picking the swollen buds during winter may keep the pest in check. Hard pruning followed by the removal of large buds has given fair results in some cases. Dusting or spraying with a mixture of lime and sulphur is advised. This consists of a mixture of 1 lb. of quicklime, 1 lb. of flowers of sulphur, and 20 gallons of water. Slake the lime and add the sulphur, forming into a paste as quickly as possible; add the water and stir into a "milk" of lime and sulphur, making up to 20 gallons and straining before use. Alternatively may be used 1 part of unslaked lime and 2 parts of flowers of sulphur, mixed together. The bushes should be sprayed with the fluid when they are dry, or dusted with the lime and sulphur mixture when they are wet, three times—at the end of March or the beginning of April, again at the middle of April, and again in May. The quicklime and sulphur in dry form is liable to scorch the leaves to some extent.

Codlin Moth. Considerable damage to Apple crops is often caused by the caterpillars of the Codlin moth. The moths appear towards the end of May, and the females, as they fly about from tree to tree, deposit their eggs on the blossoms or in the "eyes" of the fruit. Caterpillars hatch out and soon commence to bore their way towards the centre of the fruit, where they feed upon the pips.

Affected Apples either fall prematurely or rapidly decay when gathered and placed in the store-room. When fully fed the caterpillars bore their way out of the Apples, make their way to the ground, find a suitable hiding-place, and spin cocoons about themselves, afterwards turning into pupae, from which other moths ultimately emerge.

All fallen fruit should be cleared away as soon as possible, and also rubbish, leaves, and dead wood lying about the ground. Oilcake bags and sacking made into bands and bound round the tree stems near the ground in July form serviceable traps, as ascending and descending caterpillars hide in them, and when caught should, of course, be destroyed. Spraying the trees with arsenate of lead after the blossom has fallen, but before the tiny fruits have turned down, is another remedy which should be tried where the pest is known to be troublesome.

Gooseberry Sawfly. The Gooseberry sawfly is very troublesome in Gooseberry plantations and gardens, and it also attacks Red Currant bushes. In many cases the leaves are quite cleared off, together with the young fruit, and unless the plague is checked it is sure to be renewed in succeeding seasons. The colour of the caterpillar varies at different stages. At first it is greenish white with a black head and a few black spots, later green with numerous black spots, and in the final stage light green with spots.

The adults appear in April or early May. The females lay their eggs on the under-sides of the leaves close to the veins. They are

HARDY FRUIT PESTS AND DISEASES

<i>Tree attacked.</i>	<i>Name of Pest or Disease.</i>	<i>Identification.</i>	<i>Notes, Season, etc.</i>	<i>Cure or Prevention.</i>
Apple	Aphides	Small lice-like flies in colonies, attacking soft foliage and shoots	Summer	Paraffin emulsion; prevented by winter caustic washes
"	Woolly Aphides or American Blight	Small insects covered with white down; found in colonies	Spring and summer; winters among the roots	Paraffin emulsion early in year; winter wash. Scrub branches with paraffin, and use brush with methylated spirit, petrol or turps for single colonies
"	Sawflies	Yellowish white maggot which eats the flowers and young fruits	May	Burn immature fruits which fall off; lime the soil with gas lime in winter
"	Lackey Moth, Ermine Moth, Codlin Moth	Coloured caterpillars which eat the foliage	April and May	Arsenate of lead spray
"		Maggot found in the immature fruits	May to July	Grease bands; spray with arsenate of lead when the blossom falls; burn fallen fruits
"	Winter Moth	Green maggots eating leaves, flowers and fruits	March to July	Grease bands; early spraying with arsenate of lead
"	Apple Sucker	Small yellowish green insects destroying leaves and buds	April to autumn	Winter spraying; arsenate of lead in summer
"	Canker	Warty outgrowth and feeble development of branch	All the year; a fungus	Cut out the part affected and paint the wound with tar; if possible, cut off the branch altogether
"	Mildew	Mealy appearance of leaves; distorted growths	Spring and summer; a fungus	Cut out diseased shoots and spray with a fungicide
Pear	Leaf Spot	Leaves badly browned	Summer; a fungus	Winter caustic wash. Burn foliage in autumn
"	Leaf-blister Mite	Blisters on leaves, caused by a mite in colonies	Summer	Ditto
Plums, etc.	Wasps	Destroy many fine fruits	Autumn or late summer	Trap them in jars containing a little sweetened beer
"	Sawflies and Aphides	Destroy the foliage	Early summer	Spray with paraffin or quassia emulsion

Currents	Aphides	Destroy the foliage	Early summer	Spray with paraffin or quassia emulsion
"	Big Bud	Buds much swollen, fail to develop; disease due to mites inside bud	Noticeable mostly in spring	Pick off swollen buds; prune severely; dust weekly with lime and sulphur from April to June
"	Sawflies and Maggots	Leaves eaten or curled; bush crippled	Summer	Spray with arsenate of lead after the fruit is gathered; use gas lime in soil in autumn
Gooseberry	Ditto	Ditto	Ditto	Ditto
"	Magpie Moth	Leaves devoured by large caterpillar	Spring and summer	Hand-pick, then treat as above
"	American Gooseberry Mildew	Attacks soft shoots first, then the leaves and fruits	Noticeable in spring and summer	Burn infested shoots and spray with liver of sulphur
Raspberry	Fruit Maggots	Yellowish white maggots in the fruit; also noticed in the blossom	June and July	Spray early in June with arsenate of lead
Strawberry	Leaf Spot	Brown spots on leaves, often called "Birds' Eyes"	May and June	Spray in May with liver of sulphur

very numerous and inserted in slight incisions, sometimes at the edges of the leaves and fastened with an adhesive substance. The eggs hatch in about six days, and the caterpillars feed on the leaves. They soon spread over other leaves and shoots, and feed for about a month. Then the cocoons are spun, generally upon or just beneath the surface of the soil under the infested bushes; the cocoons of the first brood are occasionally found upon the twigs and may sometimes be found on the leaves. In about three weeks the adults issue and proceed in turn to their egg-laying. There may be three generations in the year; the cocoons of the last brood of the year are found deeper in the ground than those of the earlier broods, and the caterpillars lie sheltering in them until the next spring, when pupation takes place.

It is advisable to remove a few inches of soil from beneath infested bushes in winter and replace with fresh. The branches should be sprinkled with hellebore powder in early summer, but in this case the fruits ought not to be used in less than five or six weeks, for this powder is poisonous. Spraying with paraffin emulsion might well be substituted. Many may be destroyed by hand-picking.

Pear Midge. The larvae of the Pear midge do much damage early in the year, ruining large numbers of fruits while they are small. The presence of this pest is easily recognised by the appearance of the infested fruits, which are much larger than normal ones. The eggs are laid in the young flowers, and the maggots hatch out inside the embryo fruits and ruin them. It is important to gather and burn all infested fruits, whether on the tree

or fallen on the ground, to prevent the escape of the grubs. The best preventive measures are to remove 2 or 3 inches of the soil beneath the tree in winter, and to replace it with fresh. The old soil ought to be buried deeply in another part of the garden. An application of kainit to the soil in autumn is also recommended.

Red Spider. This is a pernicious little pest which plays havoc with the leaves of fruit trees, more especially of those under glass or in a hot position out of doors, as, for example, against a south or west wall. When attacked by red spider the leaves lose their deep green colour and become pale and sickly. The simplest remedy is salt and water, used at the rate of 1 oz. of salt to 1 gallon of water. The solution must be directed to reach the lower surface of the leaves, where the pest is usually found. Red spider dislikes moist conditions, therefore is less likely to attack trees which are kept thoroughly moist at the root during summer, and of which the branches are sprayed or hosed frequently.

Scale. This insect sometimes infests Peach and other fruit trees; it clings to the branches and shoots, and is most easily removed by means of a stiff brush dipped in Gishurst Compound, Fir tree oil insecticide, or paraffin emulsion. The latter is made by dissolving 1 lb. of soft soap in a little hot water and adding sufficient hot water to make 2 gallons. A wineglassful of paraffin is then mixed in the solution, which must be used while hot.

Thrips. A minute pest which does much damage to the leaves of fruit trees, more particularly those under glass or on a hot wall. The

affected parts have a rusty, withered appearance. Spraying or syringing frequently with water tends to prevent attacks, while an insecticide, paraffin emulsion, quassia solution, or nicotine solution are useful remedies.

Winter Moth. The larvae of the winter moth do a great deal of damage in gardens generally by feeding on the buds and young shoots. The moth lays her eggs on the trees during winter, and in spring the larvae hatch out and attack the fresh growths. When fully grown the caterpillars lower themselves to the ground by means of threads and pupate in the soil. As the females are unable to fly they may be caught when ascending the trees in autumn and winter, by means of grease bands placed round the stems about 2 feet from the ground-level. The simplest way of preparing these is to obtain grease-proof paper, which is tied round the trunk of the tree, and is then well smeared with one of the preparations sold for the purpose.

Diseases of Fruit Trees. Two of the most alarming diseases affecting the Apple are Apple scab and brown rot. Apple scab disfigures the fruits by scabs and spots. Preventive measures are to spray with Bordeaux Mixture when the fruit is set, and again three or four weeks later. Dead and diseased shoots and branches must be carefully cut out at the winter pruning. Trees on which the fruit is affected with brown rot should be similarly treated, and, in addition, all the fruits which turn dark brown or black and remain on the tree ought to be gathered and burnt. Those that fall should also be disposed of.

The Pear scab often disfigures

large quantities of fruit, and the trees must be dealt with in the manner advised for preventing Apple scab.

The silver leaf disease of the Plum is apparently increasing; it is far more noticeable in gardens now than it was a few years ago. The Victoria Plum seems peculiarly liable to attack. The presence of this disease is easily recognised by the silvery grey appearance of the leaves on infected branches. There is no known cure at present, though some good is done by cutting off and burning diseased branches and by an application of sulphate of iron to the soil about the trees in autumn.

Chief of the diseases affecting the Peach is Peach leaf curl or blister, the effect of which is to raise reddish blisters on the foliage

and seriously to affect the growth of the tree. Spraying with Bordeaux Mixture in spring, after the fruit is set, is recommended, and badly diseased shoots are best cut off and burnt. Mildew is often troublesome to the grower of Peaches and other fruits. The trees ought to be sprayed occasionally with liver of sulphur solution, $\frac{1}{2}$ oz. to 1 gallon of water, in spring and early summer after the flowers have faded.

Gooseberry mildew is one of the most troublesome diseases of fruit trees. It is important to cut off and burn badly affected shoots, to gather and burn fallen leaves in autumn, and to spray with liver of sulphur solution in early summer; several sprayings should be given every two or three weeks.

CHAPTER 61

Flower Garden Pests and Diseases

ANT. This creature is often troublesome in the garden, and when established it is not easily got rid of. If it is practicable to use boiling water, the application of this to the nest will destroy it. But ants often congregate at the foot of fruit trees and plants, and in rockeries, where boiling water cannot be used. The best plan then is to place near the nest a few bones having a little meat on, and to examine these occasionally ; when covered with ants they should be put quickly into hot water.

Aphis (Green or Black Fly). The secret of success in dealing with this pest is to take measures against it early. Aphides increase very rapidly and are difficult to destroy when present in large numbers, and they do great damage to trees and plants by sucking the juices from the young shoots. The simplest method is to syringe the affected shoots, once a day for three or four days, with paraffin emulsion made as follows: Dissolve a handful of soft soap in boiling water and make up to 2 gallons with warm water. Then add a wineglassful of paraffin and a cupful of milk.

Carnation Maggot. Those who grow Carnations must have noticed that some of the plants collapse for no apparent reason ; upon examination the stem has been found eaten

away by a maggot. Affected plants should be pulled up and burnt. A good preventive measure is to keep the soil well hoed, while spraying with nicotine soap in summer also helps.

Chrysanthemum Leaf Miner. The grubs of this pest burrow between the leaves and disfigure them greatly. The grubs may be killed by pressing the leaf where they are to be seen. The plants should be sprayed with paraffin emulsion in spring and early summer to prevent the flies from laying their eggs on the leaves.

Frog-hopper. Everyone acquainted with the country will have noticed a curious white frothy spittle upon the wild plants during summer. This spittle, or "cuckoo spit," as it is popularly called, hides a greenish yellow grub, which is the larval stage of the cuckoo spit or frog-hopper. It is the larvae or grubs of the "hoppers" that produce cuckoo spit. The perfect insects abound most in late summer and autumn. When the curious-looking larvae are deprived of the shelter afforded by this frothy secretion they appear at first quite helpless, and if the day be hot are almost immediately killed. Hence an effectual mode of clearing plants of cuckoo spit is to brush it off during sunshine. Syringing frequently with an insecticide,

forcing the spray into the froth, will destroy this pest.

Earwigs. This pest infests Dahlias, Chrysanthemums and other flowers, and should be trapped by placing empty match-boxes among the stems and shoots and emptying them every day into boiling water.

Red Spider. A minute pest that attacks the lower leaf surface of many plants and does much harm. It can be destroyed by syringeing the lower surface of the leaves with salt water, 1 oz. of salt to 1 gallon of water. Red spider is chiefly to be feared when plants or trees are grown in a hot, dry position.



The Frog-hopper or Cuckoo Spit, a common and troublesome pest of flowering plants in the spring and early summer months. It can be destroyed by syringeing frequently with an insecticide.

Syringeing frequently with clear water and keeping the plants moist at the roots will often prevent damage by this pest.

Rose Sawflies. These attack the leaves of Roses and greatly disfigure them. The bushes should be syringed frequently in spring and early summer with nicotine soap. The leaf-rolling sawfly rolls up the leaves until they seem like thin strips, and when it is hidden within the rolled leaf insecticides no longer reach this pest.

Slugs and Snails. These pests are always more abundant in badly tilled ground than in that which is properly cultivated. Autumn



Slugs do great damage in gardens, especially in damp, mild weather. They can be trapped by using baits of orange peel or bran and by using lime, soot and patent slug-killers.

digging should be practised on all vacant land, the surface being left rough during winter, and the hoe must be used freely during the summer months. Applications of lime, soot, and the advertised soil fumigants, together with the use of artificial manures in preference to yard or stable manure, help to get rid of them.

Thrips. This pest infests the leaves of plants, more particularly of those grown under glass and in hot, dry positions out of doors. Syringeing frequently with water and keeping the soil moist tend to keep away this pest. It can be destroyed by the use of nicotine soap or other good insecticide, but several applications are usually necessary.

White Fly. This is a most difficult pest to get rid of; it attacks chiefly Tomatoes and other crops under glass. It is advised to fumigate frequently with Auto-shreds or other nicotine compound.

Black Spot. Rose trees are often badly damaged by this disease: dark blotches form on the leaves,



Snails do much harm in the rock garden, in frames and other places. They hide among stones, rocks and garden rubbish, and should be searched for and destroyed.

PESTS AND DISEASES OF FLOWERS

OUT OF DOORS

<i>Plants attacked.</i>	<i>Pest or Disease.</i>	<i>Identification.</i>	<i>Cause, etc.</i>	<i>Cure or Prevention.</i>
Seedlings	Damping-off fungus	Discoloration of stem; plant topples over and soon dies	A fungus; bad ventilation and excessive moisture	Better treatment and a fresh compost
"	Slugs and Snails	Foliage lacerated and plants eaten up	Pests more common in damp weather. Work at night	Hand-pick: dust plants with soot or lime; ring of lime or Sanitas powder
All Plants	Wireworms and Millipedes	Small yellow and grey "worms" which attack the roots and cripple the plants	Good tillage and liming keep them in check	Trap with pieces of potato; fork in soot or any good soil fumigant
"	Leather Jackets	Large, stout dark green caterpillars which are found at the roots	Ditto Ditto	Ditto
Most Chrysanthemums and Marguerites	Leaf-mining Grubs	Markings or blotches on the leaves due to the grub working inside the tissues	Egg deposited by parent fly on the leaf	Hand-pick infested leaves and use some insecticide
Most Plants	Aphides or Plant Lice	Small green or dark-coloured flies found on the soft shoots or under leaves	Breed very rapidly and cripple the plants	Soapy water or any insecticide
"	Thrips	Small creatures that spoil the flowers with spots	Warm weather and lack of moisture	Plenty of water over plants and soil
Violas and Asters	Stem Disease	Stem darkens becomes soft, plant topples and dies	A fungus carried by seedlings and seeds	No cure; pull up and burn; lime the soil
Composite Flowers	Earwigs	Make their home among the petals; very dirty creatures	Not destructive, but objectionable	Trap them with dry paper or moss in small inverted flower pots, etc.
Sweet Peas	Streak	Yellow and brown streaks on the stem and leaves. Plant very feeble or dies	A fungus; bad in close, moist weather	Pull up the plant and burn it, then spray the others and the ground with weak permanganate of potash solution

Sweet Peas	Mildew	Mealy appearance on stems and leaves	Usually attacks plants which have received a check	Spray with Bordeaux Mixture or liver of sulphur
"	Clover Mould	Yellow spots or streaks which are noticed on leaves; leaves shrivel up	Burn all plants at end of season	Hand-pick infested leaves and spray as above
"	Pea Spot	Small spots appear on leaves; enlarge very rapidly; leaves fall off	A fungus. Ditto	Ditto
Roses	Mildew	Mealy appearance on young stems; foliage much distorted	A fungus often induced under bad conditions	Spray with any fungicide
"	Spot and Blotch	Markings on leaves, which shrivel up	Fungus diseases which cripple the bush	Hand-pick the infested leaves and spray with any fungicide
"	Sawflies and Leaf Slugs	Eat the leaves; sometimes roll them up as nests or bore into the stem	Many different genera: all very destructive	Spray with arsenate of lead. Hand-pick rolled leaves
Violets	Blossom Weevils Red Spiders	Gnaw the buds Plant droops and wilts; creatures rather difficult to see	— Dryness the main cause	Spray with insecticide Be lavish with water until they disappear
IN THE GREENHOUSE				
Roses and other Shrubs	Scale Insects	Small shell-like creatures that are closely attached to the bark	Seem stationary, but can migrate	Scrub with paraffin emulsion or use Fir Tree Oil or Gishurst Compound
Most Plants	Mealy Bug	Small woolly insects nestling in cracks and foliage	Very destructive; not wholly eradicated by fumigation	Touch with brush dipped in petrol or methylated spirit
Roses, Chrysanthemums, Carnations, etc.	Mildew, Rust, and other fungi	Parasitic fungi akin to those mentioned above	—	Liver of sulphur or Bordeaux Mixture
Most Plants	Red Spiders and Thrips	Due to over-dryness; plants droop and flowers become spotted	—	Water freely, or spray every second day with weak insecticide
"	Insects	As enumerated above	—	Fumigate

and eventually all these may fall in summer, greatly weakening the trees. It is a most difficult trouble to deal with. The Pernetiana Roses are more subject to black spot than others. Diseased leaves should be picked off and burnt and the trees should be sprayed with Bordeaux Mixture as they start into growth. It is most important that the soil be not deficient in potash. Heavy dressings of wood ashes are beneficial, and sulphate of potash,

2 oz. per square yard, should be put on in March.

Mildew. This is a serious disease of Roses and other plants : it is recognised by the grey mould which forms on the leaves and shoots. Badly affected leaves should be picked off and burnt and the bushes sprayed with liver of sulphur, 1 oz. in 5 gallons of water. Spraying in spring just as the leaves are unfolding with Bordeaux Mixture is also advised.

CHAPTER 62

A Year's Work in the Garden

JANUARY.

THE FLOWER GARDEN.

Christmas Flowers. On a sheltered border among the hardy Ferns and in sundry cosy nooks the white blossoms of the Christmas Rose are welcome. The protection of a hand-light is useful; failing this, loose leaves or bracken may be used to shelter the flowers from wind and frost.

Violets. Plants in a frame and those growing under the shelter of a wall or fence are in bloom. Those in a frame require occasional watering, possibly once a fortnight. Remove decaying leaves, or the trouble will spread rapidly at this season.

Canna (Indian Shot). In the garden in summer the Canna, or Indian Shot, is worth planting for its handsome foliage and flowers. As the name Indian Shot suggests, the seed is large and hard. To hasten germination soak the seeds for twenty-four hours previous to sowing now in a heated greenhouse.

Fuchsia. For beds, borders, vases and window-boxes much more use should be made of Fuchsias as bedding plants. They may be put out in partially shady places. Bring out from the winter store a few old plants and place them in a heated greenhouse to

supply cuttings during February. Fuchsias may be raised from seeds sown now in a warm greenhouse.

Tuberous Begonia. To maintain a supply of vigorous plants for summer bedding a few should be raised from seeds each year. They will flower the first season if sown early in January in a heated greenhouse.

Heliotrope. Start into growth under glass a few plants of the fragrant Cherry Pie to supply cuttings for insertion during February. If no old plants are available sow seeds in a heated greenhouse.

Dropmore Anchusa. In digging over the hardy flower border some clumps of this popular blue flower may appear worn out. These should be lifted, the thick, fleshy roots being cut into pieces 3 or 4 inches long and placed at the foot of a wall or fence; they should be put in a bed during April, and will make good plants for final planting next autumn.

Hollyhock. Lovers of this tall border plant should try raising plants from seeds sown in a heated greenhouse early in the year. Both double and single-flowered sorts are readily raised from seeds; if desired, certain colours only may be grown, and a large percentage will come true. Seedling Hollyhocks flower from July to October.

Jew's Mallow. *Kerria japonica* flore pleno is the botanical name of the old-fashioned Jew's Mallow, an orange yellow flowered shrub often seen in cottage gardens. It grows 5 to 6 feet or more in height, thrives in most soils, and is readily propagated by lifting and dividing the clumps now.

Hardy Border Plants. All dead tops should be cut off and burnt, but those that are still green must not be removed. Continue to divide and transplant as occasion requires, and if possible do the work when the ground is not too wet. Clear away all weeds.

Winter Jessamine. For winter flowering *Jasminum nudiflorum* is the best of all shrubs for fence and wall. The rich yellow blossoms borne in long sprays are valuable to cut. The shrub thrives in ordinary soil on a wall of any aspect. Layering a few of the lower shoots is the readiest method of propagation. Prune in March after flowering.

Tufted Pansies. To follow the spring and summer display of *Violas* or Tufted Pansies, make a sowing of seed in a heated greenhouse. These will provide a succession of blossoms from July until autumn.

Pentstemons. These favourite flowers of the mixed border are extensively raised from seeds to-day in preference to, or in addition to, the older practice of propagation by cuttings. Sow the seeds in a warm greenhouse, and plant the seedlings out of doors during May where they are to flower.

Flowering Roots. As soon as opportunity occurs examine the roots or bulbs of the following plants in the frost-proof shed or

cellar: *Dahlia*, *Salvia patens*, and *Gladiolus*. Remove those showing signs of decay; if any roots appear too dry add a little moist soil or sand to that in which they are stored.

Japanese Stonecrop. As an edging for the flower border the Japanese Stonecrop (*Sedum spectabile*) is one of the best autumn perennials. The roots can be lifted and divided now. The plants grow about 1 foot high, and produce flat heads of rosy red flowers in August-September; they attract bees and butterflies; they thrive in ordinary soil, and are valuable on a north border.

Annual Carnations. Several strains of Carnations, notably the *Marguerite*, *Vanguard* and *Grenadin*, blossom from July to October if sown in a heated greenhouse during February. Seed of Perpetual Flowering Border Carnations, if sown now under glass, will produce flowering plants within seven to eight months.

Scarlet Sage. *Salvia splendens* is one of our best flowers for the beds and borders in summer. *Fireball* and *Glory of Zurich* are two dwarf sorts, forming compact plants 20 to 24 inches high, a blaze of scarlet blossoms in late summer and autumn. Sow seeds now in a heated greenhouse, or insert cuttings under a bell-glass taken from old plants wintered on a greenhouse shelf.

Shasta Daisy. To supply quantities of blooms for cutting, the *Shasta*, or *Ox-eye Daisy*, is one of our best border flowers. Increase is by division of the clumps and from seeds sown in a heated greenhouse during early spring. Among the

numerous sorts, May Queen, Westralia, King Edward VII. and Mrs. C. Lothian Bell are recommended.

Bedding Calceolaria. The plants of bedding Calceolaria in a cold frame require attention. Pinch off the tips of the most advanced to make them produce side shoots. The protective covering should be removed each day, but for some time yet must be replaced every evening. It is a pity more attention is not paid to Golden Gem, Shah, Camden Hero, and other Calceolarias, as they are possibly the best summer bedding plants that can be grown without warmth.

THE KITCHEN GARDEN.

Cauliflowers in Frame. Those who have a few plants from a sowing made last August must see that the soil is not allowed to become dust-dry, or many plants will go "blind." Give what water is required early in the morning, and during bright, mild weather admit air by tilting the "light."

Early Peas. To obtain an early crop sow seeds of the variety Little Marvel in a box filled with light soil. Sow the seeds 1 inch apart, and after covering them with 1 inch of soil place the box in a frame or greenhouse. Plant the seedlings out of doors early in April.

Parsley. Sow a little seed thinly in a box filled with light soil. The seedlings may be planted out of doors in April; the leaves will be most useful from May onwards. Cover a portion of the out-of-door bed with large flower-pots, as a protection against frost; do not cover the holes in the pots.

The Onion Bed. The importance of a well-prepared bed for this useful crop can hardly be over-estimated. Plenty of well-decayed manure

should be used, this being dug in 12 inches or so below the surface. If the bed is got ready now it will be in excellent condition by March or April. Leave the surface rough.

Early Lettuce. If seed of a good variety is sown on a mild hotbed or in a warm greenhouse it will soon germinate; the seedlings will be useful for filling sheltered spots early in April; well-developed "hearts" will be ready about the middle of May.

Forcing Rhubarb. If strong clumps were put into warmth in December signs of active growth will now be apparent. Plenty of moisture is essential; if the growth is made in total darkness the Rhubarb will be of better colour.

Ordering Seeds. Order the quantity of seeds likely to be required for sowing in the spring, more particularly Beans, Peas, Parsnips and Onions.

Swedes. Where these are still in the open garden take advantage of the first opportunity to get them up. After cutting away the tops and the long root, store in a shed, or place in a heap near a fence or wall, and cover with 6 inches of soil.

Broad Beans. These may now be sown for earliest supplies. The crop from land which has received a good dressing of manure is usually far better than that from soil not enriched. Giant Longpod is a good variety. Try the new type of dwarf Broad Bean named The Sutton.

Leeks. These are the hardiest vegetables grown in this country, and may be expected to withstand any frost; but it is often advisable to take up a few and store in dry soil under cover in case the ground becomes frozen.

Winter Turnips. Pull all fully-grown roots and store in a dry shed, leaving the tops on the ground; after chopping these up fairly small bury them 1 foot below the surface.

Mint. This requires little warmth to force it into active growth. A few roots placed in a glasshouse, where the temperature averages 50 degrees, soon give shoots of useful size.

Early Potatoes. Tubers intended for planting in a frame, in pots, or in the open border for the earliest supply should now be selected and placed, "eyes" upwards, in a light room safe from frost.

Cucumbers. Unless a night temperature of at least 55 degrees can be maintained it is unwise to sow seed of Cucumber for cultivation in a small glasshouse. Those who wish to cut good fruit by Easter may do so if they now purchase plants and grow them in a temperature of 50 degrees. Bottom heat of some kind is necessary.

THE GREENHOUSE.

Bedding Geraniums. If cuttings of bedding Geraniums (or, more correctly, Zonal Pelargoniums) were inserted in boxes in the autumn and kept in a frame during winter they will now be somewhat crowded. They should be potted singly in pots 3 to 4 inches in diameter. In about three weeks' time the tops should be pinched out.

Sweet-scented Daphne. That fragrant greenhouse shrub, *Daphne indica*, which flowers in winter and early spring, needs attention as soon as the blossoms are over. The plants must be repotted in a mixture of loam, peat and sand. As much of the old soil as can be removed without unduly damaging

the roots should be taken off, and then they must be repotted.

Butterfly Flower. A few of the earliest plants of *Schizanthus*, or Butterfly Flower, selected from those sown last autumn and wintered in small pots, should be now put into flower-pots 5 to 6 inches wide. A suitable compost consists of 2 parts loam to 1 part of leaf-mould, with a little sand.

Perpetual Flowering Carnations. If good cuttings are obtainable this is a suitable time to propagate these Carnations. Short-jointed side shoots make the best cuttings. These should be from 3 to 4 inches in length, and cut off with a sharp knife immediately below a joint. The bottom pair of leaves having been removed, the cuttings are inserted in pots of very sandy, sifted soil. In a closed propagating case in the warmest part of the greenhouse they will soon root.

Nerine or Guernsey Lily. The Nerine is a showy bulbous flower which is in full beauty in autumn; the plants make their growth during the winter, and at that season need a light position in the greenhouse. The soil must be kept reasonably moist. As the leaves turn yellow in spring the water supply must be lessened, and discontinued when the bulbs are dormant.

Indian Azalea. Some varieties produce leaf growths immediately below the flower buds; unless they are removed the flowers may come to nothing. Hold the main shoot, or branch, in the left hand, and with the right hand pull out the undesirable shoots with a twist sideways.

Freesia. The flower stems are just appearing among the leaves in

the warm greenhouse. Feed the plants, and so strengthen the stems and the flowers. Keep them in a light position, but not too near the roof glass, as if caught by frost they are ruined.

Palms. If kept in rather a low temperature and in small pots the leaves of Palms often become yellowish at this season. Water once or twice a week for two months with the following : 1 teaspoonful of sulphate of ammonia per gallon of water, used alternately with soot-water. The leaves will be quite green again by spring.

Stored tubers under stages, and perhaps rather close to hotwater pipes, should be examined, or some of them may be lost through dry rot. Place a board between them and the pipes. Guard against drip. If any tubers of *Gloxinia*, *Begonia*, etc., are beginning to grow do not attempt to keep them quite dry, but surround them with moist leaf-soil.

Protecting Plants from Frost. The amateur may become anxious concerning the preservation of his plants from severe frosts. Sheets of brown and other paper, placed between the front glass and the plants, will keep out several degrees of frost. The summer covering of canvas or tiffany should be brought out now and suspended from the roof—inside—a few feet from the glass.

THE FRUIT GARDEN.

Woolly Aphis. This troublesome pest of Apples can be dealt with to some extent at this season. Whenever the pests are seen, in cracks and rough places on the stems and branches, they may be killed with a brush dipped in paraffin.

Training Fruit Trees. It is wise to get all tying and nailing of fruit trees on walls and fences finished as early as possible. All ties should be examined and renewed where necessary. When tying, allow room for the growths to swell during summer.

Pruning Cherries. It is very easy to overprune sweet Cherries. Allow plenty of young shoots to remain where the branches are liable to the disease known as "gumming," then it will be an easy matter to replace branches that die. Do not cut back the shoots of Morello Cherry, but tie them in, over the whole available space, about 4 inches apart.

Birds and Buds. Birds will now begin to take toll of the buds of fruit trees unless prevented by some means. Protection can be afforded in some cases by netting, but this is not always possible. Lime sprinkled over the trees when damp will prevent damage being done for a time, but needs renewal.

Pruning Gooseberries. In doing this work cut away low branches from near the soil. This allows of the hoe being used beneath the bushes in summer and prevents the branches from becoming rooted in the earth. Cut out shoots too thickly placed, so that when pruning is completed the hand can pass freely into the bushes. Do not cut back young growths, except in the case of pendulous varieties, when it may be needful to keep young shoots from touching the ground.

Preparing for Grafting. Fruit trees which it is proposed to graft in March or April may be cut back in readiness now. Simply saw the branches off a little higher than where they are to be grafted.

Pruning Cordon Fruit Trees.

When these little trees have been planted some years the fruit spurs are apt to become too crowded, and it is wise to cut off a few of the oldest. Side shoots that were "stopped" in summer should now be cut back to within about two buds of the base.

Fruit Trees on Grass Land. Do not fail to keep the soil round the stem of each tree free from grass for at least six years after planting. Where this is neglected the trees are slow in starting into growth and become stunted.

Lime for Fruit Trees. Lime is an essential element in the successful cultivation of all stone fruits, and Apples derive great benefit from an application. The lime is best put on the land in small heaps. It soon falls to a powder, and is then ready for spreading.

Apricots. In pruning these endeavour to retain as much as possible of the previous summer's growth. Secure the young shoots to the wall 4 to 6 inches apart. When shoots have to be shortened, cut just above a cluster of three buds. Apricots are naturally free-growing trees, and should have plenty of space.

Root Pruning. The time of year has come when this work must be finished. Small trees may be completely lifted to enable thick roots to be cut back. In dealing with large trees, the thick roots are found by taking out a trench 5 feet or so from the stem and then forking away the soil until the roots are seen. It is best to root prune one side of a large tree one season and the other side the next season. Many small trees merely need lifting and replanting.

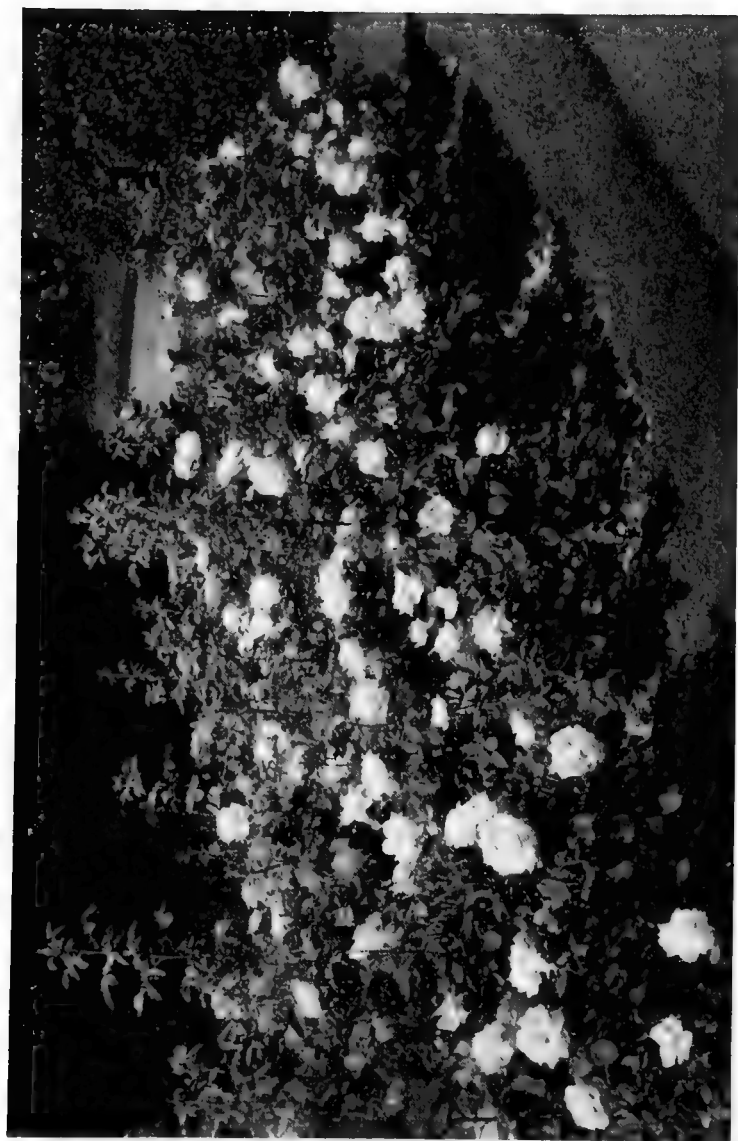
Propagating the Vine. It is an easy matter to raise young Vines by means of "eyes" or buds. Cut a well-matured Vine shoot into inch lengths, each having a bud; they are placed singly in small pots and plunged in bottom heat in a glass-house or a hotbed. Where sufficient warmth is not available the work should be deferred for a few weeks. The young plants need to be grown in a warm, moist atmosphere until midsummer.

Mistletoe on Fruit Trees. This is more or less detrimental to the trees, though small pieces do not seem particularly harmful. Seeds will germinate on the branches if inserted in cracks of the bark, as much as possible out of sight of birds.

Pruning Large Branches. When cutting out large branches of old fruit trees see that they are cut close back. Snags should not be left, as these are apt to decay or may be the means of starting canker. Smooth over the edges of all cuts with a sharp knife. This helps the cuts to heal more quickly.

Fruit under Glass. Cleanse Vines and Peach trees under glass. All glass and woodwork should be thoroughly cleaned with hot water and the walls limewashed. The stems of Vines and Peach trees should be washed with a solution of soft soap.

Limewashing. There can be no question that limewashing the stems and main branches of moss-grown trees does good. The small branches may have finely-powdered lime thrown amongst them when wet with dew or fine rain. The best method of limewashing is, of course, by means of a spraying machine, but not all are possessed



One of the old garden Roses Mrs. Sharman Crawford which bears large blush-coloured blooms



Shirley Poppies, favourite hardy annuals, which are invaluable for cutting. Seeds may be sown in autumn or spring.

of this, and the above method answers quite well.

FEBRUARY.

THE FLOWER GARDEN.

Monkshood. If the soil is suitable for lifting and dividing the several kinds of Monkshood (*Aconitum*), do this now. The plants thrive in most soils, preferably of a moist nature, in sun or partial shade, and are generally recognised as among the best perennials for the town and suburban garden.

Spiræa Anthony Waterer. This is the best shrubby *Spiræa* for the amateur's border. The average height is 2 feet; the dwarf, bushy plants produce attractive crimson flowers from July onwards. To prune, cut out the thin shoots and shorten the thicker shoots to within 2 or 3 inches of the base.

Pruning Clematis Jackmani. Prune the varieties of this valuable *Clematis*; in addition to the popular violet-purple-flowered *Jackmani*, there are *Gipsy Queen*, *Snow White*, *Star of India*, and *Ville de Lyon*. It is worth while reducing last season's shoots to one-half or even one-third their present length.

Japanese Pinks. Though strictly speaking hardy biennials, the Japanese and Indian Pinks are often treated as annuals, the seeds being sown in a heated greenhouse this month. Vigorous young plants are then available to plant outside in a sunny bed or border during May. Pinks thrive best in well-drained, sandy soil. There are many rich and varied colours in the two sections, *Dianthus Heddewigii* (the Japanese Pink) and *D. chinensis* (the Indian Pink).

Rudbeckia or Coneflower. This is a valuable border flower, and is

prized for cutting. The plants thrive in most soils, especially when well tilled and manured. This is a good time to lift and divide the clumps and to purchase fresh roots for planting. The best sorts are: *speciosa*, 2 feet; *maxima*, 4 feet; *Golden Glow*, 6 feet.

Tiger Lily. *Lilium tigrinum* thrives well in ordinary border soil. Once planted, the bulbs should not be disturbed for some few years, as each succeeding season the clumps improve in beauty. Now is the time to purchase bulbs from the florist, planting in groups of five or six bulbs. Cover with some 4 inches of soil.

Scarlet Lobelia. It is time to get the clumps of this autumn flower from the winter store. Each tuft can be readily divided into several pieces. The pieces may be potted singly in 4-inch pots, or set out 3 to 4 inches apart in boxes. Sandy, leafy soil is best for them at this stage. The popular sorts are *Queen Victoria* and *Firefly*; others worth growing are *Glory of St. Anne's* and *Sam Barlow*.

Pruning Various Clematis. Now is the time to prune the *Clematis* which flower during the summer and autumn. *Belle of Woking*, *Duchess of Edinburgh*, and others of the florida group of *Clematis* do not require much pruning as they blossom early; merely cut out dead and weakly growths. The *patens* group, which includes the lovely variety *Nellie Moser*, needs similar treatment. In dealing with *Clematis Henryi*, *Beauty of Worcester*, *La France*, and others of the lanuginosa type, the growths should be shortened to at least half their present length. The *Viticella* section, of which *Kermesina*, *Gipsy*

Queen, and Star of India are examples, can be cut back freely. Do not prune *Clematis montana* until after flowering.

Planting Roses. When the weather is favourable and the ground in suitable condition, complete the planting of Rose trees. Early spring planting in preference to November planting is sometimes recommended on heavy soils and those trenched in autumn.

Pruning Buddleia. *Buddleia variabilis* and its varieties give the best results when pruned hard each year at this time. The vigorous young shoots of last summer's growth should be shortened to within about 1 foot of the older wood.

Delphiniums. Seedling perennial Larkspurs or Delphiniums rival the named sorts. Sow seeds of a good strain in a heated greenhouse, prick off the seedlings when large enough to handle. Grow for a time on a greenhouse shelf, transfer to a cold frame during April, and in May or early June plant outside in the border.

Gaillardia. Though perhaps best treated as a biennial, the *Gaillardia* can be readily grown as an annual by sowing the seeds in a heated greenhouse during February. Losses among plants in the borders can thus be made good. There are double and single-flowered sorts in pleasing red and yellow blossoms to choose from.

Border Chrysanthemums from Seeds. There is always the spirit of novelty about the raising of seedlings. With the border Chrysanthemums the work is particularly interesting; there is a wide range of colours in single, semi-double and double blossoms. If seed is sown in

a heated greenhouse now plants can be raised to flower from August to November. They will make an excellent display, and prove useful for cutting.

THE KITCHEN GARDEN.

Jerusalem Artichoke. Now is the time to make a planting of the white variety; it is superior in size and flavour to the better-known purple variety. This vegetable is a certain cropper, and makes a particularly good soup.

Early Celery. If well-grown "sticks" of Celery are desired early in autumn, a little seed of such varieties as Sutton's Solid White, White Gem, or Wright's Giant White should now be sown in a well-drained pot and placed in a warm greenhouse. Keep a sheet of glass or brown paper over the pot until the seed germinates.

Sowing Peas. It is too early to make large sowings of Peas in the open garden, but in a warm position a few short rows of such as The Pilot, William the First, the Lincoln, or Little Marvel may be got in. Before sowing scatter wood ashes or leaf-soil in the drills.

Early Sprouting Broccoli. Commence cutting the shoots as soon as they show the purple tips. If they are left to attain full size next month a few bright days may bring them into flower before they can be used.

Shallots. Put out a few rows of these as early as possible, placing the bulbs at 6 to 8 inches apart in rows 10 inches from each other. Rich well-dug ground is necessary.

Seed Potatoes. Seed tubers set up to sprout early in the year will now be showing signs of life; if many sprouts appear remove all

except two or three at the extreme end of the tuber.

Winter Spinach. Old stems and damaged leaves should now be removed, afterwards well stirring the soil with the hoe. As the days lengthen the plants will produce useful leaves throughout the spring.

Rhubarb. If a new bed is to be made this spring, get the ground well manured and deeply dug now. It is a mistake to suppose that good results will follow if planting is done in any but rich soil.

The Onion Bed. It is usual to prepare this some time in advance of the date of sowing. If no yard manure can be had, use bonemeal or superphosphate, 2 oz. to the square yard.

Winter Lettuce. If these have stood the winter unharmed, advantage should be taken of the first mild weather to get the ground between the rows well stirred with the hoe. If this is done and a light sprinkling of fertiliser given, it will stimulate growth and greatly add to the table quality of the Lettuce.

Onion Sets. These are a boon to amateurs who desire to grow Onions of large size with little trouble. If a good strain is purchased the result invariably proves a success. Next month will be soon enough to plant, but the purchase of the sets required should not be delayed. Onion sets are miniature bulbs.

Parsnips. Parsnips still remaining undug should now be lifted and stored in a cool shed or in the open near a wall, covered with a little soil. The land they now occupy, if dug and manured, will be ready to receive a crop without further preparation.

Tomatoes in Pots. These give remarkably good crops when grown in 9 or 10-inch pots in a greenhouse. Seed should now be sown if fruit is expected in June. Sowing the seeds singly in small pots has much to commend it to the amateur, as this enables repotting to be done without any check.

THE GREENHOUSE.

Snapdragon and Pentstemon. Seeds of these beautiful flowering plants may now be sown. In a temperature of 50 degrees or so they will quickly germinate. When large enough to handle the seedlings must be pricked off into shallow boxes of light soil, and later planted out of doors.

Zonal Pelargoniums. A considerable number of cuttings may be taken from old plants that have been saved, while the tops may be removed from the largest of the young ones. These cuttings, if put into pots of sandy soil, will form roots on a shelf in the greenhouse.

Fuchsia. Old plants of Fuchsia that have been kept dry and dormant during the winter should be now taken in hand. All straggling shoots must be shortened. If placed in the greenhouse and watered, young shoots will quickly appear. If the plants need repotting it should be done when the new shoots are about 1 inch in length.

Lobelia. Old plants of blue Lobelia which have been kept in the greenhouse during winter are now starting into fresh growth. When these are a little more than an inch in length they may be taken as cuttings, and if dibbled in pots of sandy soil and kept "close" will soon root. Lobelias may be raised from seed sown now.

Begonia and Gloxinia. Where a temperature of 65 degrees or so can be maintained seeds of these and of *Streptocarpus* are usually sown earlier in the year. If only an ordinary greenhouse temperature of 50 degrees or so is available, it is better to wait until the present time before sowing. Sprinkle the seed thinly on pots of fine soil, and cover with a pane of glass.

Potting Ferns. The different Ferns will soon be making new fronds. Where any require potting, this should be carried out now. If left till the new fronds appear they will receive a check. Some of the old soil should be taken away; 2 parts loam to 1 part of peat or leaf-mould with a little sand suit most Ferns.

Petunia. The different varieties of *Petunia* are propagated by seeds or cuttings. The present is a good time to sow seeds, and cuttings may be taken as soon as the young shoots are about 2 inches in length. They must be cut off at a joint, the bottom leaves removed with a sharp knife, and dibbled into pots of sandy soil. Place in a closed and shaded case.

Potting Composts. Towards the end of this month and in March a great many greenhouse plants will need repotting. Valuable time may be saved by preparing the compost now and taking it into the greenhouse to get warm. A mixture of 2 parts loam to 1 part of leaf-mould or peat and a little silver sand will suit most plants.

Early Flowering Gladioli. These form an attractive feature in the greenhouse in summer. As the bulbs of these early varieties are much smaller than those of the later kinds, the roots may be put

half a dozen in a pot 5 inches in diameter. Sandy loam suits them well. After potting they can be stood in a frame safe from frost.

Bougainvillea. If trained to a roof with sufficient space for development the pruning of this showy climber may be limited to thinning out overcrowded shoots. As the plants grow they will need an increased amount of water.

THE FRUIT GARDEN.

Sowing Melons. A sowing of Melons should now be raised without difficulty in an ordinary frame placed on a bed of manure and leaves. The seeds may be sown singly in small pots or in the soil of the bed.

Planting Fruit Trees. The time will soon come when planting for this season must cease. Everything should be got in readiness so that there may be no delay when the weather is favourable for the work. Examine the roots of all trees before planting out; if any are damaged cut off the broken portions with a sharp knife.

Manures for Gooseberries. Farm-yard manure is by far the best for these bushes, but it is often almost unprocurable. When such is the case bonemeal, given at the rate of 4 ounces per square yard, will be found of benefit to the trees if required. Fish manure has also proved of value for Gooseberries if given at the same rate as bonemeal.

Wood Ashes. Take care of all trimmings of herbaceous plants and prunings of fruit trees for the sake of burning them for their ashes. These, if kept dry, will prove useful for supplying potash to fruit trees.

Planting Strawberries. The ground ought now to be prepared

for these if spring planting has to be done. When the surface is dry the land may be roughly broken up. If some decayed manure can be dug in at the same time the young plants will be helped considerably.

Soot and Lime. These in mixture are useful for dusting over Gooseberries and Currants for preventing the attacks of birds on the buds. Soot alone will be found of service in encouraging the growth of fruit trees and bushes.

Mealy Bug on Vines. Nothing but great cleanliness and persistent efforts can rid a vinery of this pest when once it has become established on the Vines. The Vines in winter should be washed in hot water as hot as the hand can bear. Gishurst Compound should then be used according to directions. All woodwork should be painted with paraffin, and the glass should be well washed. Brickwork ought to be coated with limewash made from freshly burnt lime, and all loose soil taken from the top of the border and replaced by fresh.

Caustic Soda for Winter Wash. Caustic soda is an old and well-tried wash for applying in winter to the stems and branches of fruit trees. Two pounds of caustic soda to 10 gallons of water make a wash sufficiently strong to clear away all mossy growths from the trees.

Raspberries. The pruning of these ought to be completed. Remove all weak shoots and those that bore fruit last year, if the latter were not cut out in early autumn. The canes of last year's growth should be shortened slightly and tied to the wires at about 6 inches apart.

MARCH.

THE FLOWER GARDEN.

Annuals to Sow. Most annuals can only be grown successfully when the seeds are sown where the plants are to flower. The seedlings are difficult to transplant. Sow thinly, preferably in sunny positions, and thin the seedlings well. Some of the best annuals are the following : Love-in-a-Mist.—*Nigella* Miss Jekyll, with blue blossoms, is the finest of all. The plants grow from 1 foot to 1½ feet high. *Mignonette*.—We cannot very well sow too much of this deliciously fragrant annual in the garden. A favourite way is to scatter seeds thinly among standard Roses. The Giant Red, Giant Yellow, and Giant White sorts are valuable to cut for vases. *Larkspurs*.—The annual *Delphiniums* are indispensable ; once they are grown, self-sown seedlings usually provide a display in succeeding years. Dwarf Rocket, 1 foot ; Emperor, 2 feet ; and Tall-branched Stock-flowered, 3 feet, give an interesting variety. *Eschscholtzia*.—The Californian Poppies have been much improved of late years. The only sort for years was yellow flowered, next came orange and white, followed by Rosy Queen, Frilled Pink, and Ruby King. Poppies.—For providing masses of colour Poppies are unsurpassed. They vary from 1 foot to 3 feet high, and comprise single and double flowers in many colours. Shirley, 2 feet ; *Pæony*-flowered, 3 feet ; Umbrosum, crimson, 1½ feet ; Tulip, scarlet, 15 inches ; Cardinal, double scarlet, 2 feet ; and Japanese Pomponne, 15 inches, are particularly desirable. Other useful annuals are Virginian Stock,

Clarkia, Summer Chrysanthemum, Rose Mallow, and Candytuft.

Propagating Dahlias. Those who intend propagating young plants from cuttings should get out sufficient tubers from the store, place them in boxes, shaking a little leaf-mould on the bottom and amongst the tubers. An occasional syringeing will soon induce young growths to push out.

Cape Hyacinth. Now is the time to plant bulbs of this beautiful late summer flower, named botanically *Galtonia candicans*. The tall, slender inflorescences of white blossoms reach 4 to 5 feet high. Groups of half a dozen bulbs are delightful in the mixed flower border, while clumps in an open space among hardy shrubs are equally attractive. The *Galtonia* thrives in ordinary garden soil which is well drained.

Ceanothus or Mountain Sweet. The varieties of *Ceanothus*, which make the garden gay in autumn with their blue-tinted and pink blossoms, require pruning this month. Last year's shoots of *Gloire de Versailles*, *Perle Rose*, and *Indigo* should be shortened to within a few inches of the older wood, unless they are against a fence. Then, if the space permits of extended growth, pruning need not be quite so severe.

Asters. The China Asters are deservedly popular. There are numerous types : *Victoria* Asters are large, flat, formal blooms of great beauty ; the petals of *Comet* Asters are, in comparison, loose in character. The single-flowered sorts, much prized for vase decoration, and the large, ball-like flowers of the *Pæony*-flowered Asters are attractive, and there are several

dwarf-growing strains specially suitable for summer flower-beds.

Japanese Anemone. Of all hardy plants which blossom in autumn none surpasses the pink and white varieties of *Anemone japonica* for the mixed flower border. A selection of the best includes *Lord Ardilaun*, white ; *Mont Rose*, rose pink ; *Prince Heinrich*, deep rosy pink ; *Queen Charlotte*, silvery pink, and *Whirlwind*, semi-double white. Now is the best time to lift, divide, and replant the roots.

Half-hardy Annuals. Sweet Sultan, *Verbena*, *Phlox Drummondii*, *Petunia*, Double African Marigold, *Zinnia*, *Balsam*, and *Salpiglossis* may be sown under glass during the next week or ten days.

Stocks. Fragrant Stocks are the pride of many gardens. The best-known kind is the *Ten-week*, though there are several forms of this, varying from *Perfection*, 18 inches, to *Superb Bedding*, 10 inches in height. *Princess Alice* is a popular white-flowered Stock of large size. Seeds of Stocks may be purchased separately in distinct colours.

Ashes for Garden Soils. Some gardens have been reduced in fertility by the too free addition of ashes to the soil. In heavy soil ashes are beneficial, but in many soils, especially those of a sandy nature, the addition of ashes, particularly those containing many cinders, is harmful.

THE KITCHEN GARDEN.

Asparagus Bed. If a new bed of this delicious vegetable is to be made get the soil thoroughly prepared without delay so that when the roots arrive they may be got in at once.

Sowing Onion. If the state of the soil allows get the bed of Onions sown as soon as possible. The rows should be 8 to 10 inches apart, and should run from north to south. A covering of half an inch of soil is sufficient.

Shallot. Plant the bulbs of Shallot and Potato Onions without further delay; make the bed firm, allowing not less than 8 inches between the rows for the Shallots, rather more for the Potato Onions. Do not bury the bulbs their full depth, but just press them into the soil until they are half covered.

Planting Cauliflower. If the garden is sheltered, plants raised in warmth early in the year may now be planted out. Rich soil should be provided. As the heads of these early plants are likely to be small, 18 to 20 inches between the plants will be ample. In planting well bury the stem as a protection against frost.

Onions for Large Bulbs. Plants intended to produce large bulbs should be pricked out into shallow boxes filled with rich compost. A layer of leaves or old manure over the bottom of the box is advised, and after pricking out the seedlings 2 inches apart, shade from bright sun.

Rhubarb Bed. Before placing odd boxes, pots or heaps of manure over Rhubarb selected for forcing into early growth in the open garden, give the soil a soaking with liquid manure. If long stable manure is used, some stout sticks should be driven into the ground a few feet from the Rhubarb; they must be of sufficient height to prevent high winds blowing away the protecting material.

Lettuce. Sow a little seed of Cabbage Lettuce All the Year Round; this is a most wonderful variety, and suitable for sowing any time from now until next September.

Broccoli. Sow a little seed of White Cape or Grange's Autumn; these will give beautiful "heads" in October, and need less room than autumn Cauliflowers.

Globe Artichoke. Plant now in groups of three, allowing a foot between the plants, not less than 18 inches between the clumps, and 3 feet between the rows.

Spring Cabbage. Give Cabbage plants put out last autumn a dressing of sulphate of ammonia, 1 oz. to each square yard. If this is well stirred into the soil growth will be more rapid.

Cucumber. Plants may now be put in a frame placed upon a hot-bed of manure. Use good loamy soil, placing two plants in the centre of each frame "light," and from each of these train two shoots, one to each corner.

Beetroot. It is safe to sow the Globe or Turnip-rooted varieties now. Sow in rather poor soil, allowing 1 foot between the rows. Where the seedlings come too thickly the surplus may be transplanted when 2 inches high.

Root Crops. It should be remembered by those about to make a sowing of Parsnip, Carrot or Beetroot that these crops give far better results from deeply-dug than from highly-manured soil. On heavy, clayey soil a dressing of fine ashes would be an advantage.

Vegetables for Shady Borders. Cabbages generally give good results on a shady border, and here the heads remain a long time in good condition, but as they lack

the size of others grown in the open closer planting is recommended.

Sowing Cauliflower. If Cauliflowers are wanted for use in July and August seed of such as Standwell, Walcheren or Early Mammoth should now be sown in a sheltered but sunny spot; the addition of a little old manure or leaf-soil to the seed bed is an advantage.

Parsley. If this has been given the protection of a frame all the winter, the frame may now be removed to cover less hardy plants. Parsley will withstand slight frosts.

Peas in Pots. Peas sown in pots some weeks ago may now be planted on a warm border. In planting disturb the roots as little as possible. Well bury the plants, allowing a foot between each potful, and place twiggy sticks to them at once.

Early Potatoes. Plant a few tubers of the earliest varieties in a sheltered spot, such as beneath a warm wall or fence; bury them at least 4 inches deep as a protection from cold.

Celery for Autumn. Seed should now be sown in a box of loam, leaf-mould and sand to supply plants for this most important crop. Avoid sowing too thickly as this only results in weak plants. Sulham Prize, Standard Bearer, and White Gem are reliable varieties for small gardens.

Large Leeks. If seeds were sown in heat last month the plants should now be ready for placing in a cold frame, if protection can be given at night; such a place is far better than a heated greenhouse.

Broad Beans. Even when the soil is heavy these are suitable for present sowing; they will give useful crops in July and August. Green

Giant and Harlington are among the best for quality.

Sowing Peas. Make a small sowing in the open garden. Cover with not more than 2 inches of soil, and where mice are feared place a few break-back traps along the rows after sowing. Gradus (4 feet), Little Marvel and Laxtonian (both about 18 inches) are suitable sorts.

Transplanting Onions. Take advantage of the first favourable opportunity to transplant the autumn-sown plants of Onions into a permanent bed. Disturb the roots as little as possible, allowing 8 to 10 inches between the rows and 4 or 5 inches between the plants. Make the soil very firm.

Parsnips. These are among the most profitable vegetables grown. If soil conditions are favourable sow in drills 1 inch deep and not less than 12 inches apart. Place the seeds in groups of three at 9 inches apart; subsequently leave only one seedling in each group.

Radishes. Make a liberal sowing of these to supply nice crisp roots in May. Protect the seed from birds, a few bushy sticks laid over the bed being better than nothing.

Preparing for Potatoes. Give the plot intended for the earliest varieties of these a final forking over. If this is done the tubers may be planted with a blunt dibber, but frequent treading upon the bed should be avoided.

Perpetual Spinach. Well hoe the soil between the rows of this vegetable. If last autumn the Spinach leaves were poor, this crop will well repay a top-dressing of manure or one of the patent fertilisers.

THE GREENHOUSE.

Hydrangea. Plants that were raised from cuttings last summer and wintered in small pots may now be shifted into pots 5 inches in diameter. A suitable compost consists mainly of turfy loam, with a little leaf-mould, sand and well-decayed manure or bonemeal. Old and exhausted shoots should be cut out of larger plants. If they do not need repotting, a top-dressing of good soil will be helpful, as will occasional doses of liquid manure.

Smilax. Plants of the pretty greenhouse climber popularly known as Smilax need to be taken in hand now. If the roots are in good condition the plants may be top-dressed with rich soil with which a little fertiliser has been mixed. If the plants need repotting a mixture of loam, peat and sand will suit them well. Good drainage is essential.

Greenhouse Climbers. The more vigorous of these, such as Passiflora, Tacsonia, etc., are now growing freely. Care must be taken to train them in the positions they are to occupy, otherwise the shoots will become entangled with each other. Superfluous shoots had better be removed.

Freesia. Where it is intended to grow the bulbs for another year (and this is the better plan) the plants must not be neglected when the flowers are over. They should be watered as before and kept in a light position. Give liquid manure occasionally to assist the growth of the bulbs. When the leaves commence to turn yellow less water must be given, and when the bulbs are quite dormant discontinue watering. Keep dry on a sunny shelf till August.

Salvia splendens. This scarlet-flowered Sage, which is so much appreciated in summer and autumn, may be readily raised from cuttings at the present season. The cuttings, which should be from 2 to 3 inches in length, must be formed of the current season's shoots. They should be dibbled in pots of sandy soil, and if placed in a close-shaded propagating case will soon root.

Begonia Gloire de Lorraine. Old plants of this Begonia that were partially cut back some time ago are starting into growth. They may now be repotted in a mixture of loam, leaf-mould or peat, and sand. Some of the old soil should be taken away. The young shoots may be taken as cuttings, but in order to ensure success a temperature of 55 to 70 degrees is needed.

Celosia plumosa. This, the feathery Cockscomb, is a valuable summer-flowering plant for the greenhouse. Seed may be sown now in light soil. The seedlings should be potted off when large enough, and later on put into 5-inch pots. The soil must be rich and not pressed down too firmly.

Half-hardy Annuals. Seeds of many annuals that are raised under glass to be planted out later on may be sown now. Prominent among them are Asters, which, in order to obtain the best results, should be kept growing steadily. The seedlings should, when large enough to handle, be pricked off into shallow boxes, about 2 inches being left between the plants. A free circulation of air must be kept up.

Clivia miniata. The earliest plants are going out of flower, and the plants may be repotted if it is needed. They, however, seldom require annual repotting, and top-

dressing with a compost mainly consisting of loam and sand is usually sufficient.

Taking Cuttings. Various greenhouse flowering plants, such as Fuchsia, Heliotrope, etc., are now growing freely. The young shoots will, if taken off as cuttings, soon root. They should be about 2 inches long and dibbled into pots of sandy soil. Then they must be put in a closed propagating case and kept shaded till rooted. A box sufficiently deep to accommodate the pots of cuttings with a pane of glass laid over the top will do very well.

Baskets of Flowering Plants. Well-furnished baskets, hanging in the greenhouse or on a veranda or balcony, have a very pretty effect when the plants are in flower. The plants should be put into the baskets now; leave each basket standing on a pot on the stage of the greenhouse till the plants become established. The baskets must be thoroughly lined with moss before the plants are put in. Suitable plants are Ivy-leaved Pelargoniums, Petunias, Tropæolums, loose-growing Tuberous Begonias and Fuchsias.

Cypripedium insigne. This is the best Orchid for growing in the small greenhouse; it flowers in the early months of the year. As soon as the blossoms are over it should be attended to. If the plants need repotting, the pots prepared for their reception must be well drained by means of broken crocks, and as much of the old soil should be taken away as can be done without distressing the plants. A compost of one-half loam and the other made up of peat, sphagnum moss and crocks broken small is suitable. If

repotting is not needed top-dress with the same material.

Agapanthus (African Lily). Where the plants have been wintered in a frost-proof shed or similar structure they must now be moved into a position where they get more light. If this is not done growth will be weak. Should it be necessary to repot or divide the plants, this must be done now, using good fibrous loam. If not repotted give occasional doses of liquid manure.

Coleus. These showy foliage plants, unless a warm greenhouse is available, are somewhat difficult to keep during the winter. When the stock has been lost, a few seeds from a good strain will, if sown now, grow freely and soon produce good little plants. Old plants which survive will now be forming new shoots. If these are taken as cuttings they will, when kept in a warm closed case, soon root.

Cyclamen. These are now going out of bloom, and where it is intended to keep them for another year they must not be neglected. After the flowers are over they must be kept in a light position and be watered as before. An occasional dose of liquid manure will be beneficial. When the leaves die off the plants must be kept dry in a frame or sheltered spot out of doors.

THE FRUIT GARDEN.

Mulching Newly-planted Trees. Young trees planted since October will be helped a good deal if manure is now placed on the soil over the roots. This will be found of great assistance in keeping the roots moist, and they will not then have the same tendency to get down into the cold, wet subsoil.

Strawberries. Give old plants a light dressing of soot between the rows and hoe it into the soil. If soot is not readily procurable, a little artificial fertiliser may be applied. Stir the soil among the young plants put out last autumn ; this will help them to start quickly into growth as well as destroying small weeds.

Melons in Frame. Those who have sufficient manure to make up a bed of about 4 feet in thickness may now make a start in raising the plants. One-third or so of tree leaves can be mixed with the manure. The whole should be well shaken, mixed together, and trodden firmly. The frame can then be placed in position, and after allowing a few days for the escape of rank steam the plants may be put out.

Bush Fruits. If any of these remain unplanted the work should be dealt with at once. It is wise to apply a mulching of manure over the roots as soon as the planting is finished. All digging should now be brought to an end amongst the bushes and the quarters made tidy for the summer. Hoe the surface soil as soon as it is dry ; numbers of weeds will soon be springing up and must receive attention or the fruit garden soon becomes an eyesore.

Canker in Fruit Trees. Apples are, as is well known, chiefly liable to this disease, especially those in cold, ill-drained land. Such land should be drained. Badly cankered parts of branches should be cut out with a sharp knife, and old branches may be cut back to wood that is free from disease. When they are treated in this manner, new

growth often results, and the tree is greatly improved.

Grafting. There need be no further delay with regard to the grafting of Apples or Pears. A mixture of clay and cow manure with as much old hay or dried grass as can be worked into it will be found the best covering. Crown grafting is the simplest form of grafting and the best for amateurs to practise. With this method it is possible to graft four or five scions on a large stock. It is almost certain that one or more will unite, thus making the work a success. Grafting wax may be used, but it is too expensive where there is a great deal of grafting to be done.

Red Spider. Something may be done to check this pest by means of sulphur dusted over affected trees or bushes, but a wash is better as a rule. Paraffin emulsion, to which has been added sulphide of potassium, 1 oz. to 1 gallon of water, is the favourite remedy with large growers. In the case of attacks on Gooseberry bushes, soot and lime in equal parts dusted over the bushes in damp weather or when the bushes are wet with dew has been found effectual.

Currant Leaf Roller. This is rather a difficult pest and one that becomes very troublesome in some districts. If the rolled shoots and leaves are picked off and burnt each day or two for a time there will not be much damage done, but in bad cases this pest will do much mischief if not checked. Not only the leaves but numbers of the clusters of blossoms will be destroyed.

Loganberry. Get the growths of these tied in without delay. The young shoots will soon be starting and there is danger of their being

damaged if the work is left too late. Whenever the weather is at all favourable young plants may be put out. Always give these plants plenty of room for their development; they are such strong growers when in good soil. Give the soil a heavy mulching of manure.

American Blight. An opportunity should be found to deal with this pest. It is usually more troublesome upon old trees than young ones. When the roots are attacked it is most difficult to deal with. This pest on the stems and branches can be destroyed by means of a brush dipped in paraffin. If American blight is on the roots, remove the soil from about them and scatter fresh lime upon them. Small quantities of carbon bisulphide injected in the soil prove effectual. This is very inflammable.

"Stopping" Vines. When Vines have made shoots long enough to allow of their being "stopped," the work should at once receive attention. "Stop" them two leaves beyond the bunch, which ought to be readily seen at this stage. To allow them to extend much more than this will only weaken the Vines.

Gooseberries and Birds. Many remedies have been advised for preventing sparrows and other birds from destroying the buds on Gooseberries. Spraying with quassia solution and various other washes has been recommended, but all need renewal from time to time if they are to be effective. Black thread stretched on the bushes is of some value, but to ensure perfect safety for them netting is best.

Pruning Apricots. These usually produce a number of young shoots which bear flower buds, and they

should not be cut back if there is room for them. The work of pruning and nailing should be done at once.

Protecting Fruit Blossom. It is now time that all Peach and Apricot trees were protected from frost. There is nothing better than double fish netting. The nets should be so arranged that they do not touch the trees. Something more is needed in very cold districts. Canvas coverings which can be let up and down according to the weather are perhaps as good as anything used.

APRIL.

THE FLOWER GARDEN.

Tuberous Begonias. Bring out the roots from the winter store. Place about 3 inches of leaf-mould and coarse sand in a shallow box, and press the tubers lightly into this. Leave an inch between each one. When growth is well advanced more space can be given.

Planting Border Carnations. Having hardened off the layers wintered in pots in the cold frame by standing them outside for a few days, plant where they are to bloom. Choose a day when the ground is moderately dry so that the soil can be made fairly firm. A dusting of old soot is an effective precaution against slugs and snails.

Herbaceous Phlox. The young growths of these beautiful border flowers require thinning on many of the clumps. As a rule three or four shoots to each plant are enough, though as many as six may be left on large, strong tufts. This is a good opportunity to increase the best sorts; the young growths, if inserted in a closed frame without heat or under a bell-glass in a greenhouse, will soon form roots.

Nemesia strumosa. For small beds and groups of rich colours in the border this half-hardy annual is very showy. The colours are orange, yellow, crimson, and other shades. Sow the seeds now in shallow boxes filled with sandy soil and place in a cool greenhouse, frame, or in a sheltered spot outside.

Nasturtiums. Nasturtiums flower best on poor ground. The tall, climbing sorts provide an excellent summer screen. The dwarf kinds are most effective as edgings to long borders and large beds. King Theodore, dark crimson, Cloth of Gold and Lilliput are three of the best for the latter purpose. Dibble the seeds in 6 inches apart where the plants are to flower.

Border Chrysanthemums. The cuttings are now well rooted, and may be planted out where they are to bloom. If any are wanted to replace the flowers later on, put them on a reserve border to be transplanted when required. Allow a distance of 1 foot between the plants each way.

Sowing Annuals. The various kinds of annuals like Clarkia, Godetia, Eschscholtzia, Nigella, Lavatera, Iberis, and others can still be sown outside where they are to flower. Rake the soil down to a fine surface and sow thinly.

Bedding Plants. Get all late-rooted cuttings potted separately as soon as possible, grow them near the glass in a greenhouse or a frame, where they will make good progress, and harden them off in May.

Dahlias. These should now be started into growth. Pot the tubers in light soil and place them in a greenhouse with a temperature of

60 degrees to start. Water sparingly, but syringe them every day. When the growths are a few inches high place the pots in a frame to promote sturdy growth.

The Herbaceous Border. Hoe the spaces between the plants occasionally to prevent the growth of weeds. In the case of plants like Phlox, Delphiniums, and other vigorous kinds, thin out the weak growths so that the remainder will have ample room. Stake those kinds that need it before they become damaged by wind and rain.

Pampas Grass. This is a suitable time to lift, divide, and replant the Pampas Grass (*Cortaderia* [*Gynerium*] *argentea*). As a specimen plant for a lawn or for planting in the shrubbery border the Pampas Grass is very handsome. Gloves should be worn when handling this plant, for the leaves are sharp-edged.

Caffre Lily or Crimson Flag. Now is the time to plant the roots of *Schizostylis coccinea* at the foot of a west wall or fence; the brilliant red flowers will open in late autumn and early winter. Plant in light, well-drained, loamy soil.

Pruning Forsythia or Golden Bell Shrub. The beauty of this spring-flowering shrub is much improved by pruning. This should be done as soon as the blossoms have faded. With the reservation that it may be desirable to leave a few of the shoots full length to increase the size of the bushes, growths which have flowered should be shortened to within 2 or 3 inches of the old wood.

Planting Evergreen Shrubs. While shrubs which lose their leaves in winter transplant readily from late October to March, those

which retain their foliage throughout the year are not so easy to manage. One of the most satisfactory periods for planting is when new growth is beginning, in April. Hollies transplant well now, so also do Pine, Cupressus, Thuya, and other Conifers, Evergreen Barberries, Evergreen Oak, Phillyrea, and Osmanthus.

Pruning Bush Roses. This work should be done late in March and during early April. Cut out weakly and ill-placed shoots and shorten the remainder; leave the vigorous shoots 6 to 8 inches long, others 2 to 4 inches long.

Increasing Perennials. This is a suitable time to propagate many hardy perennials by cuttings. Take off the shoots below the surface of the ground with an old table knife, insert them in pots of sandy soil, and place them in a hand-light stood on the greenhouse stage.

Convolvulus or Morning Glory. As a fast-growing climber for comparatively warm and sheltered places this is very useful, giving a profusion of richly-coloured blossoms. It may be raised in pots in a greenhouse or frame, or seeds can be sown where the plants are to flower. They are excellent for a summer screen or arbour, and are also attractive in the border, supported by pea-sticks.

THE KITCHEN GARDEN.

Sowing Vegetable Marrows. Early fruits of these are always welcome; if a few seeds are now sown in small pots and after the middle of next month planted in a rough frame, fruit of useful size will be ready in July.

Sowing Peas. Make further sowings of maincrop varieties. Have the soil deeply dug, mixing in some

manure 12 inches deep, and apply a sprinkling of lime to the surface. Sow in a flat drill, making two lines of seeds, the lines 6 inches apart. Prince of Wales, Senator, Strata-gem, Daisy, and Fertility are excellent sorts.

Sowing Turnips. Those who like Turnips to be sweet and juicy should avoid making a large sowing. A small row sown once a fortnight will be more likely to give satisfaction than a large sowing made at one time, except in August.

Sowing Beetroot. Long-rooted Beetroot may be sown now. A recently manured plot of ground must be avoided, but a dressing of salt and fine mortar rubble is an advantage.

Cucumbers for the Frame. It is a mistake to attempt the cultivation of these for early crops unless a start is made with strong, healthy plants. Those that have filled a 5-inch pot with roots are the best.

Sowing Spinach. This is one of the most useful of all crops for present sowing, and if given a piece of well-dug ground will give nice gatherings in a few weeks' time.

Sowing Parsnips. Seed may still be sown. Large roots can hardly be expected, and for this reason 8 inches between the rows will be ample.

Summer Cabbage. Sow a little seed of such reliable varieties as Pointed Head, Mein's No. 1, or Beefheart for early August use. These give a good deal of produce, and need at least 2 feet of space each way.

Sowing Carrots. Where the garden is small, selection should be limited to the stump-rooted varieties. If seeds are sown now, a

second crop from the same bed may be had from a July sowing.

Sowing Leeks. Do not fail to find room for a few rows of these, and if seed has not been already sown, do not delay. Sow only on rich soil, and scatter the seed thinly. The Lyon and London Flag are good varieties for amateurs.

Supporting Peas. On no account fail to provide support for all rows of Peas before the haulm has toppled over. If this is not done and the growth loses its upright character, damage is inevitable, and the crop will be later in coming to maturity. Even the dwarf varieties give heavier crops if supported.

Planting Onions. Plants raised in boxes may now be put out. Let the small bulbs rest on the soil; do not bury them. After planting give a good watering, and if a little old fish netting can be spared, use this for a few days to give slight shade from strong sunshine.

Ridge Cucumbers. If no convenience exists for growing Cucumbers in a frame, ridge varieties are welcome. Seeds may now be sown in the open air, but, better still, sow in small pots and place the pots in a sunny window. Avoid making the soil too wet.

Potatoes. The earliest rows are now showing through the ground. Draw a little soil to the tops as a protection. Where the rows are in a sheltered spot, a light scattering of hay is often sufficient protection against frost.

THE GREENHOUSE.

Aralia Sieboldii. This, which is frequently, though erroneously, termed the Castor Oil Plant, is of considerable value for greenhouse or room decoration. It is easily

raised from seeds, which should be sown as soon as they can be obtained. If established plants need repotting it should be done now.

Cytisus racemosus. This, the Genista of the florists' shops, has now passed out of bloom. Seed pods should be cut off and straggling shoots shortened. If the plants need repotting it should be done now. If stood out of doors during the summer the plants will flower all the better next season.

Clematis indivisa. This charming evergreen Clematis, which is too tender to be grown out of doors in this country, is often trained to the roof of a greenhouse. If the allotted space is covered, it should be pruned directly the white starry blossoms are over; the long shoots on which the flowers have been produced should be cut back nearly to their base. If further roof space is available these shoots may be fastened up.

Epacris (Winter Heath). These pretty winter and early spring flowering plants should be pruned back hard directly the blossoms are over. This means removing the long shoots that have flowered to within an inch or so of their base. Then, if kept somewhat drier at the roots and occasionally moistened with the syringe, they will produce new shoots. If necessary they must be put into larger pots, using peat and sand pressed down very firmly. From the end of July they can be stood out of doors.

Perpetual Flowering Carnations. Those that are in small pots are probably sufficiently advanced to be shifted into larger ones. The soil must consist chiefly of loam. This may be lightened by a mixture of leaf-mould, bonemeal, and brick

rubble. In potting the compost should be fairly firm.

Indian Azaleas. When these have done flowering they should be encouraged to make good growth for another season. This is done by keeping the atmosphere "closer" than before and by frequent syringeing. If the plants do not need repotting an occasional watering with soot-water will be beneficial. Annual repotting of Azaleas is not necessary, but if it is done the compost should be made up of peat and sand, and firm potting is essential.

Acacias. As these go out of flower any straggling shoots may be cut back in order to form shapely plants. If repotting is needed this should be done now, using a mixture of loam, peat and sand. When frosts are over the plants may be stood out of doors for the summer months.

Campanula isophylla (Drooping Bellflower). The drooping growth of this Bellflower renders it suitable for growing in suspended baskets or pots. In this way it is of great service in the greenhouse or in the window of the dwelling-house. The plants are now growing freely after their winter rest, and may be divided or shifted into larger pots. Ordinary potting soil will suit them well.

Chinese Primula. If these are required to bloom in autumn a little seed may now be sown. A mixture of loam, leaf-mould or peat and sand forms a suitable compost. The seed should be sown thinly in clean, well-drained pots or pans, and but lightly covered with soil. In the warmest part of the greenhouse and shaded from the sun the young plants will soon make their

appearance. When large enough they must be potted singly in small pots.

Lilies. Bulbs of these that were potted some time ago are now growing freely. At the first potting sufficient space should be left to allow of a top-dressing of good soil. As the roots at the base of the stem are now active, fresh soil should be added at once; the plants will be greatly benefited thereby.

THE FRUIT GARDEN.

Melons in a Frame. Take out the tip of each shoot to encourage the side growths to start quickly. Use tepid water for the roots and for syringeing. Close the frame early in the afternoon and syringe the plants previously.

Apricots. Thin out the young shoots of these where crowded. By disbudding and "stopping" the shoots it is possible in a great measure to dispense with the use of the knife; if less cutting were done there would be less danger of "gumming" and loss of branches.

Caterpillars on Fruit Trees. Much damage is quickly caused to the trees and their crops at this season by the caterpillars of certain moths. To deal effectually with these pests spraying is necessary. The best stuff to use is a poison—arsenate of lead. This should be used at the rate of 1 pound arsenate of lead in 20 gallons of water and should be sprayed on the leaves in a fine mist-like spray, thus poisoning the food of the caterpillars.

The Strawberry Bed. Keep the bed well hoed and clear of weeds as far as possible. If long straw manure is obtainable, have this spread between the rows after all weeds have been taken up. It will

have been washed clean by the time the fruits are ripe, and will then be suitable material for them to rest upon.

Grafting. Drying winds succeeded by storms of rain often cause a good deal of trouble where clay has been used for covering grafts. In changeable weather all the grafts should be looked over from time to time, and any cracks found ought to be at once filled up with the mixture used in grafting. Where this is neglected there may be a number of losses from this cause alone.

Gooseberries. If leaf-eating caterpillars are seen the bushes should be sprayed with arsenate of lead, 1 pound in 20 gallons of water. The fruits must not be eaten for six weeks afterwards.

Disbudding Peaches and Nectarines. A commencement must be made with this work. Begin at the top of each tree and disbud a few branches at a time. In this manner there is less risk of a check to the trees than when the whole of the work is done at once. One fresh shoot must be left at the base of each older branch, and one at the top, and, if there is room, another may be left near the middle. During a period of three weeks gradually remove all the other fresh shoots.

Leaf Blister on Peaches. Examine the trees, and if the foliage is found to be blistered, such leaves as are attacked should be removed and burnt. Spraying with liver of sulphur will do good, but the substance now recommended for use against this disease is Medeola, a proprietary article. Much damage is quickly caused if the trouble is

not dealt with at once when discovered. Spraying with Bordeaux Mixture in February is a preventive.

Spraying Apples. It is of importance that trees usually troubled with apple-sucker or aphids should be sprayed. Get the work done before the flowers open if possible; if attacked while quite young the pests are more vulnerable than later. Spray before and after flowering with nicotine soap.

The Unheated Vinery. In the glasshouse which is not heated artificially the Vines are now starting into growth. Two or three shoots usually develop at each spur. These should be disbudded, only the strongest shoot, providing it possesses a bunch of Grapes, being retained; it ought to be possible to see quite early which shoot is likely to produce the largest bunches.

Tying Vine Shoots. The work of tying down Vine shoots requires a considerable amount of care. Unless brought down to the trellis gradually they will break off at the base. Bring each shoot down an inch or two at a time until all are tied into position on the wires.

MAY.

THE FLOWER GARDEN.

Double Daisies. Among the spring flowers these are favourites to plant as edgings to beds and borders. Now is a good time to lift and increase the plants by division, and to sow seeds on a prepared border out of doors.

Border Calceolarias. The plants thrive best in a rather moist soil, preferably with some shelter from the scorching midday sun. Calceolarias are quite satisfactory on a

north border and useful in window-boxes. Plant out of doors now.

Canterbury Bells. These are great favourites; sow now on a border out of doors. Canterbury Bells blossom in June and July. There are three distinct sections, single, double, and cup-and-saucer varieties. The colours include shades of pink, blue or mauve, and white. The plants grow 2 to 3 feet in height.

Pentstemons. As summer bedding and border flowers Pentstemons are invaluable. They are readily propagated from cuttings in autumn, and a further supply of plants can be raised by sowing seeds in a heated greenhouse towards the end of February. The plants grow some 2½ feet high, flowering freely from midsummer until checked by frosts. Now is the time to plant them.

Thinning Annuals. One of the secrets of success in the cultivation of annuals is to give the seedlings plenty of room. It is a very natural failing to leave too many plants in a given area. Thinning need not be done all at once; always look over the plants two or three times. Seedlings of some annuals may be transplanted in showery weather, but not Poppy, Mallow, or Mignonette.

Border Carnations. Shake a little soot and bonemeal amongst these, and then use a small flat hoe freely to work the fertilisers in the surface soil.

Sweet William. Seeds should now be sown on a prepared border out of doors or in a box of sandy soil in a frame. Prick out the seedlings when large enough on an open piece of ground. Pink Beauty, Scarlet Beauty, and Crimson Beauty are all good varieties.

Flowering Bulbs. It may seem a small matter, but to remove the faded flowers of Hyacinths, Tulips, and Daffodils strengthens the bulbs considerably. Only pick off the dead flower heads to prevent the development of seeds; leave the long flower stalks.

The Summer Cypress (*Kochia tricophylla*). Seeds of this pretty foliage plant will, if sown now, grow freely. For decorative purposes towards the end of the summer they are very useful; the foliage turns a lovely colour in autumn. Do not allow the seedlings to experience any check.

Lupins from Seed. The hardy perennial Lupins are among the finest flowers of early summer. Sow seeds now on a border outside. The plants average 3 to 4 feet in height, thriving in most soils and positions, including the north border. Obtain a good strain of seed, and the flowers will be shades of purple, pink, rose, yellow, and white.

Aquilegia. Columbines, or Aquilegias, deserve a place in every garden. The plants thrive in most soils and blossom freely in sunny and partially shaded borders. They are recommended for north borders and small gardens. They are perennials, but it is usual to raise a few young plants from seeds each year to ensure a stock of vigorous clumps. Sow seeds now on a prepared bed of soil outside.

Rhododendrons. As the flowers on these hardy shrubs fade the trusses or clusters of blossoms should be carefully picked off. In addition to improving the appearance of the bushes, their removal prevents the development of seeds, thus throwing the plants' energy into making new growths.

Lilac Bushes. Pick off the bunches of flowers when over to prevent the production of seed. Cut out crowded and weak growths ; also thin the young shoots developing, if likely to be too numerous. Mulch with decayed manure.

Honesty. This is an easily grown plant. Its merit lies in its suitability for odd corners and under trees where few flowering plants thrive satisfactorily. The plants grow some 2 to 2½ feet high, with pale purple flowers, followed later by shining silvery seed vessels, which are valuable for winter decoration. Sow now.

Wallflowers. Of all spring flowers, many place the deliciously fragrant Wallflower first. Sow the seeds now in shallow boxes of soil or on a border outside. Blood Red, Cloth of Gold, Faërie Queen and Fire King are useful sorts.

Dividing Spring Flowers. Within the next few weeks plants which have finished flowering should be lifted from beds and borders. These include Polyanthus, Primrose, Double Daisy, Arabis, Aubrietia, Iberis, and several Saxifrages. The plants to be retained for another season's flowering should be carefully divided into several pieces, each with a few roots attached, and planted on a north or west border.

Tufted Pansies. The young plants propagated from cuttings last autumn should now be set out in the flowering positions. In planting, work in a little fresh material. Soot, decayed manure from a hot-bed, wood ashes and leaf-mould are suitable. Remove all the flowers to concentrate the energy of the plants in establishing themselves in the new positions.

Hardy Perennials from Seed.

Prepare a seed bed in a favourable position outside, and sow the following hardy border perennials : *Lychnis chalcedonica*, *Delphinium*, *Lupin*, *Peach-leaved Campanula*, *Aconitum Napellus*, *Aquilegia*, *Shasta Daisy*, *Galega officinalis*, *Malva moschata*, *Centaurea montana*, *Papaver orientale*, *Pyrethrum*, *Scabiosa caucasica*, *Sidalcea* and *Trollius*. Sow the seeds thinly to obviate the necessity of transplanting the seedlings when very small.

Annuals. Fill vacancies in the flower borders by sowing seed of the following quick-growing annuals : *Acroclinium*, *Adonis æstivalis*, *Anagallis*, *Bartonia aurea*, *Calendula* (Pot Marigold), *Eutoca viscida*, *Gilia*, *Gypsophila elegans*, *Dwarf Rocket*, *Larkspur*, *Mignonette* and *Leptosyne Stillmani*. Tie up the foliage of Crocuses along the front of the border, and sow lines of *Portulaca* or *Sweet Alyssum*.

THE KITCHEN GARDEN.

Autumn Sown Onions. Give these a liberal application of old soot or a sprinkling of old fowl manure, well stirring the soil with the hoe afterwards. Plants raised in boxes in spring must now be planted out. Make the soil firm, and where this is dry and sandy plant in shallow drills drawn out with a corner of the hoe.

Bush Marrows. Seeds of these may now be sown in the open air ; those having only a small garden will find them more profitable than the long trailing varieties.

Corn Salad. Although not largely grown, this forms a capital summer salad, and is one of the most quick-growing of all. Sow now in drills

6 inches apart, thinning out where necessary to 4 inches between the plants.

Endive. The curled variety of Endive is often greatly appreciated in a mixed salad. To obtain plants for late summer use sow at once on a warm border, transplanting 1 foot apart in a shady place when the plants are a few inches high.

Sugar Corn or Maize. Sow now out of doors in rich, deeply dug soil. Place groups of three seeds at 12 inches apart, and subsequently remove all seedlings except the best one in each group.

Sprouting Broccoli. Seeds of this should now be sown for use next winter and early spring. A long succession is assured by sowing both the early and late purple varieties and the White Sprouting. The Green Sprouting variety, although less popular than those named, is worthy of extended cultivation, being hardier and several weeks earlier than the ordinary Purple Sprouting.

New Zealand Spinach. Plants raised in pots may now be planted out. This is one of the very best summer vegetables for a dry position.

Early Celery. In a warm corner of the garden make up a little raised bed, and upon this put out some early Celery plants. If they are allowed a space of 3 inches each way good sturdy plants will be ready to put out after the earliest row of Peas is over.

Beetroot. Birds are very fond of the leaves of early Beetroot, and for this reason plants now pushing through the soil should have protection. Old fish netting or the liberal use of black thread is as good as anything for the purpose.

Japanese Cucumbers. These are both interesting and profitable, and deserve attention from those not possessing a garden frame. The plant grows very rapidly, and for this reason makes an excellent climber for old stumps or a shed.

Early Carrots. Seeds of Early Nantes or Early Gem if sown now in finely broken-up soil will give nice young roots in a few weeks.

Salsify. There is yet time to sow seeds of this for next winter's use. Sow only in well-dug but unmanured soil, allowing a foot between the rows and 9 inches between the plants.

Asparagus Bed. Give beds of this now in full bearing an occasional sprinkling of sulphate of ammonia, 2 oz. to the square yard. Failing this, use soot freely during showery weather; keep the bed free from weeds.

Egg Plant. Plants raised in warmth may now be planted out 2 feet apart on well-manured ground. Give shelter from cold winds until the end of the month, and later on water freely and draw up the soil to support the stems.

Early Cauliflower. The early plants well repay a little extra care during the present month. Should very cold nights be experienced cover each with a large pot or a few bushy sticks. A teaspoonful of sulphate of ammonia well stirred into the soil near the stem of the plant and watered in will hasten growth.

Planting Tomatoes. Well hardened plants may now be planted in the open garden. Give them the support of a stout stick and do not use the watering-pot too freely.

Red Cabbage. Two or three plants of this should be found on every allotment. If planted now on rich ground at 3 feet apart large heads will be ready in the autumn.

To Keep Away Slugs. Where slugs are damaging the rows of Peas, Lettuce or Radishes dust very finely-sifted ashes freely among the plants, wood ashes being better than those from coal or coke.

Onions from Boxes. Plants put out from boxes a short time ago will be greatly helped if the bed is well syringed or lightly moistened through a fine-rosed watering-can in the evening of a hot day.

Lettuce. Give plants now forming hearts ample supplies of clear water and weak liquid manure. This, in addition to hastening development, ensures the quality of the leaves being good.

Kohl Rabi. This forms a very useful vegetable if pulled when the roots are about the size of a small Turnip. It often succeeds when Turnips fail, and should be sown now. The seedlings may be transplanted later on if necessary, or they may be thinned out and left to grow where sown.

Early Potatoes. Keep a sharp watch over the earliest rows of Potatoes. As soon as the tops push through the surface have a little light material on hand for covering purposes should frost seem likely.

Leek. Success with this important crop depends very largely on a sturdy, uninterrupted growth. Where the plants are crowded thin them out so as to allow them to stand quite clear of each other. The surplus plants make a delicate spring salad.

Labrador Kale. Those having exposed gardens should make a

sowing of this, one of the very best winter greens in existence for planting in cold districts.

THE GREENHOUSE.

Winter-flowering Begonias. The various Begonias which make such a good show in the warm greenhouse during late autumn and winter are increased by means of cuttings formed from shoots at the base of the old plants. They should be taken off at a length of about 2 inches, dibbled in pots of sandy soil, and placed in a closed propagating case till rooted.

Cinerarias from Cuttings. Sometimes a single plant or two will prove so meritorious that it may be desired to increase them. This can be done by means of cuttings. As soon as the flowers are over the old plants should be cut partially back, leaving as many leaves on as possible. Fresh shoots will soon appear, and when sufficiently advanced they may be taken off as cuttings. If kept close and shaded they soon root.

Bouvardia. Plants that were shortened back some time ago are now growing freely, and may be put into the pots in which they are to flower. A mixture of loam, leaf-mould or peat, and sand suits them. Young plants may also be moved into larger pots; pinch out points to keep bushy.

Standard Fuchsias. In order to obtain these the strongest of the young plants should be taken and secured to an upright stick. The growing point must not be injured in any way, and side shoots should be taken off. By this treatment the required height will soon be obtained, and when this is the case the top can be pinched out so as to

form a branching head. From the pendulous nature of their blossoms, Fuchsias are seen to considerable advantage when grown as standards.

Francoa ramosa (Bridal Wreath). This graceful white-flowered plant has of late years become popular. The plants are now growing freely. It is consequently a good time to repot them if this is needed, or to give them an occasional stimulant if it is decided not to repot. The *Francoa* is readily raised from seeds sown in the spring, or, in repotting, some of the weaker shoots taken off as cuttings will soon form plants.

Selaginella (Club Moss). There are several *Selaginellas*, but by far the easiest to grow is *S. Kraussiana*, which is an extremely useful plant in the greenhouse. It is of creeping, moss-like habit, and bright green in colour. For furnishing the edges of the stage, or clothing the ground underneath, it is very useful. The old plants may now be broken up, and the shoots dibbled somewhat thickly in pots filled with light soil. If kept sprinkled and shaded they will soon grow.

Making Room in the Greenhouse. Many plants that have been wintered in the greenhouse may now be turned out of doors. Among them are *Acacia*, *Agapanthus*, *Azalea*, *Crinum*, *Daphne indica*, *Myrtle*, *Oleander*, *Rhododendron* and others. These should at first be stood in a sheltered position, and afterwards plunged in a bed of ashes or coconut refuse for the summer.

Browallia. If seeds of these pretty blue-flowered plants are sown now they will form neat little specimens to flower in the winter.

The two best are *Browallia speciosa* and *B. viscosa*, both of which can be freely grown from cuttings if treated as a *Fuchsia*.

Shading. Not only for the health of the plants, but also for the comfort of the worker, the greenhouse will need to be shaded from bright sunshine. The most desirable arrangement is to use blinds fixed on rollers, as they can be drawn up when not required. Size and whitening make a good permanent shade to paint on the glass.

Syringeing. Plants of all kinds are greatly benefited by syringeing. Beside keeping the leaves clean, it also serves to keep off insect pests. Plants that are in flower should, however, not be syringed. If syringeing is done in the evening the foliage will remain moist throughout the night.

Watering Plants. It is much better now to water plants in the greenhouse in the evening than in the morning. In winter, if watering is done in the morning, it allows time for the superabundant moisture to dry up before night. In summer, however, the water is so quickly dissipated by the increased heat of the sun that there is not time for the plants to absorb as much as they should. If watering is done in the evening the moisture is retained all night.

THE FRUIT GARDEN.

Disbudding Apricots. Look over the trees and disbud where needed, leaving only those shoots for which there is room. Strong shoots which tend to grow straight out from the wall should be rubbed off. Tie in the best medium-sized growths for forming fruiting branches. Do not retain too many; it is necessary in

growing choice fruit to allow ample space.

Codlin Moth. In some orchards this is a great pest. Eggs are deposited in the eye of the Apple. Spraying with arsenate of lead (1 pound to 20 gallons of water) through a fine sprayer so that a thin film of this poison is on the leaves is the best way of destroying the caterpillars.

The Strawberry Bed. The nets may be placed over the beds at any time now if straw or litter has been put on. If possible, so fix the netting that the fruit is easy of access and yet is safe from the birds. The soil between young plants should be frequently hoed and watered in dry weather. To save labour in this respect apply a light mulch of manure between the rows.

Thinning Grapes. Where this work has to be done it should be taken in hand early. When commenced in good time it can be done so much more quickly, and better bunches result. It is almost impossible to thin Grapes properly when the berries have become wedged together.

Peaches and Nectarines. It ought soon to be possible to make a final disbudding of these. Always leave a shoot to replace the fruiting branch of this season. The terminal shoots should be allowed to remain. Dust with tobacco powder any shoots showing signs of aphides.

Fertiliser for Gooseberries. If these have had no manure during the winter or spring useful help can now be afforded by a dressing of sulphate of ammonia. This should be scattered between the bushes at the rate of 1 to 2 ounces to the square yard. Hoeing should be done the first fine day after-

wards. Repeat the application in about a fortnight if the land is poor or the bushes are known to make weak growth.

Loganberries. The strong young growths which spring from the base of each plant at this season must be tied in position. Unless these are properly cared for the crop of fruit next year may be poor or fail. Tie up the strongest and remove the weak ones, limiting the number according to the space at command.

Raspberries. To ensure strong, healthy growth the plants must have ample supplies of moisture. It is a good plan to apply a mulch of rich manure at this time of the year. Before applying the manure make sure that the ground is moist and quite free from weeds, or these may cause a good deal of trouble afterwards.

Cherries. Every precaution should be taken to keep the trees in good health. See that the young shoots do not become infested with black fly. This is a great scourge to Cherries if allowed to increase. Syringe with an insecticide as soon as the aphides are seen, or the fruit will be most objectionable and uninviting in appearance.

Watering Wall Fruit Trees. Even after heavy rains it will be found that the roots of fruit trees on walls or fences are dry. There is usually a good deal of trampling at the foot of walls, and rain does not readily penetrate in consequence. The soil should be loosened with a fork to let in the water.

Plums. Old trees on walls will benefit if the growths receive some attention. Plums bear best from moderately strong two-year-old shoots, and young growths might well be laid in each year where there

is room. There must be no crowding, but space can be made by the removal of old wood. Spray with quassia extract or other insecticide should aphids appear. Trees which become infested with this pest cannot be expected to produce either flowers or fruit, because they cannot make proper growth.

JUNE.

THE FLOWER GARDEN.

The Rose-Beds. Previous to stirring the surface soil to prevent the growth of weeds and to keep the ground open, sprinkle a little bone-meal and soot between the plants. This will encourage free growth after the first crop of flowers. Remove all suckers.

Pruning Deutzia. The Deutzias are among the best dwarf shrubs flowering in late May and during June; *gracilis* is the first to open and one of the best. The flowers are white. Cut out the old growths when the flowers are past, to encourage new shoots. A mulching of decayed manure may be given with advantage.

Perennial Cornflower. *Centaurea montana* is a most valuable late spring and early summer flower. Growing about $1\frac{1}{2}$ feet high, the plants succeed in most soils, giving quantities of blue flowers. Now is the time to sow seeds on a border outside.

Bedding Plants. By this date it is considered safe to plant out of doors, in beds and borders, window-boxes and vases, the bedding plants kept in the greenhouse during the winter. Until established in the new soil, watering two or three times a week will be necessary if the weather is dry. Syringeing each

evening after hot days is very beneficial.

Auricula. The cultivation of the Auricula is a fascinating hobby from which a considerable number of amateurs derive much pleasure. When they have finished flowering, pick off the old flowers not required for seeds, and add a little fresh soil, consisting of loam, leaf-mould, and sand.

Planting Dahlias. It is safe now to plant these out of doors. The roots started in a greenhouse or frame may be carefully divided. Plants with one vigorous shoot each are suitable, though several growths can be left when quantities of flowers are the object.

Pruning Flowering Shrubs. As these pass out of flower some pruning and thinning are desirable. Those shoots which have produced flowers should be cut out, to encourage the growth of vigorous young shoots. The Jew's Mallow (*Kerria japonica* fl. pl.), *Spiræa prunifolia* fl. pl., *Prunus triloba* fl. pl., and the early-flowering *Ceanothus* ought to be dealt with in this way.

Sowing Forget-me-nots. Forget-me-nots are among the treasures of the spring garden. The plants thrive in various positions, being most at home in a partially shaded and moist place. Once grown, self-sown seedlings year after year perpetuate plants in some gardens. Sow seeds now on a north border, and transplant to flowering positions in autumn.

Coreopsis grandiflora. Where large supplies of flowers for cutting are required this hardy plant is indispensable. The best results are obtained by treating it as a biennial, sowing the seeds on a

border outside early in June. The rich golden yellow blossoms are borne in profusion on long stalks throughout the summer.

Mixed Flower Border. This is now gay with bloom, and should be kept free from weeds. Plants freshly put out should be watered during evenings after hot days. Plant out annuals raised in boxes to fill up blanks caused by the fading of spring bulbs.

Geum Mrs. Bradshaw. This is an ideal plant for the flower border, and its rich crimson blooms are now at their best. If the dead flowers are removed regularly it will blossom most of the summer. A stock of plants is easily raised from seed sown now.

Border Carnations. These are growing freely, and the hoe should be run between the rows occasionally. Stake and tie the plants at once to keep the growth erect. Applications of weak liquid manure will assist in the development of fine flowers.

Hardy Azalea. Any long, straggling growths should be shortened back after flowering. All dead blooms should be removed, or seed pods will form, with the result that growth is checked and flower buds do not come so freely for next year.

Darwin Tulips. The bulbs of these and other May-flowering Tulips should be lifted about the end of June. Although they are sometimes left for one season undisturbed, the bulbs should at least be lifted in alternate years, or the majority of them will deteriorate.

Oriental Poppies. While the vivid red flowers of the perennial Poppy are well known, the new shades of colour, varying from bluish white to old rose, salmon and

orange, deserve to be increasingly grown. A packet of mixed seeds sown now on a border outside will produce plants to flower next summer.

Tufted Pansies. To maintain the display, pick off the faded blooms to prevent seeding. A little fertiliser shaken among the plants and watered in, such as guano, fish manure, bonemeal or soot, or watering with liquid manure, is very beneficial. A week or two later a top-dressing of rich soil will help to prolong the flowering season.

Increasing the Pink. One cannot really have too many fragrant Pinks in the garden. Towards the end of June propagating should commence. Cuttings are shoots removed from the parent plants with a knife, "pipings" are shoots removed by holding the growth in the left hand and giving the top a sharp upward pull with the right hand. Make up a bed of sandy soil in a fairly shaded position, dibble in the prepared shoots about 1½ inches apart, water thoroughly, and cover with a hand-light. Keep the hand-light closed until rooting commences, shading if sun reaches them.

Sowing Foxglove Seed. This is an indispensable plant. It grows and flowers freely in moist, shady positions and poor soil where few plants thrive. Sow where the plants are to flower, or in a reserve bed. The sorts with spotted flowers are particularly pleasing.

Double Gypsophila. Few grow the single Gypsophila when they have seen the double-flowered sort. Seeds sown now in a frame or on a border outside provide the easiest method of increase. From seventy-five to eighty per cent. of the plants

produce double flowers from seeds. Division of the clumps, cuttings and root-grafting are practised, but seeds offer the simplest method of propagation.

Cuttings of Shrubs. Most shrubs can be propagated at one or another season of the year by cuttings. In a closed propagating frame some will root readily towards the end of June. These include Forsythia, Lilac, Staphylea, Ceanothus, Dier-villa and Deutzia. Have plenty of sand in the soil; one-third or even half will not be too much.

Brompton Stocks. These old-fashioned biennial Stocks are unfortunately not so much grown as they deserve. Ten-week Stocks are more popular, because the plants flower in about half the time from seed. In point of beauty, however, there is no comparison. Stately spikes of the Brompton Stock have no rivals. Sow the seed now on a border outside. In cold districts, pot the plants in autumn, and give them the shelter of a cold frame in winter.

THE KITCHEN GARDEN.

Cabbage Lettuce. This type of Lettuce will be more likely to give satisfaction on light soil than the tall-growing Cos varieties. If the seed can be sown where the crop is to mature it will be an advantage.

Maincrop Onions. Dust the bed frequently with old soot or wood ashes. When using the hoe, keep well clear of the plants; if the soil is constantly loose near them it offers an excellent refuge to the Onion fly, which is not slow to take advantage of it.

Carrots for Autumn. It is useless to expect that sowings of long-rooted Carrots will give good returns when made so late as this,

but early varieties sown during the next fortnight will give serviceable roots.

Fertiliser for Potatoes. Where these were planted in poor ground, a good dressing of artificial fertiliser should be strewn between the rows previous to the final earthing up. Sulphate of ammonia 3 parts, super-phosphate of lime 5 parts, applied at the rate of 2 oz. per yard of row, form an excellent mixture.

Early Potatoes. Such well-known early varieties as Express, Victor, Ninetyfold, Harbinger, if they were planted in good time, ought now to be ready to dig, but only those actually needed should be taken up.

Spraying Potatoes. Those who desire clean, heavy crops cannot afford to neglect spraying. Bordorite is a concentrated form of Bordeaux Mixture which, if used now, and again in three weeks' time, will help to keep the plants free from disease.

Salsify. If really good examples of this are to result, allow each plant from 9 to 12 inches of space, and whenever the soil approaches dryness use the hoe freely, in order that the surface may be porous and allow free entry of sun and air.

Tomatoes in a Frame. Providing a start is made with good plants, heavy crops may be taken from Tomatoes growing in an ordinary garden frame. Four plants will be enough for a frame 4 feet wide; plant at the bottom and train the stems to the top of the frame, keeping the growth well clear of the glass.

Late Peas. Late rows of Peas showing through the soil are worthy of special attention. Do not be in too great a hurry to put the sticks

to them, but keep the hoe going along each side. When 6 or 8 inches of growth has been made, earth up exactly as for Potatoes, after which put in the supports.

Late Beetroot. Thin out the late-sown rows of these, leaving the plants about 8 inches apart. Watering after thinning is recommended. There is still time to make further sowings of Globe Beet, but, excepting where the soil is naturally rich, large bulbs will not result.

Vegetable Marrows in a Frame. Give these plants abundance of fresh air and syringe them twice a day. If they are not setting fruits freely, keep rather dry at the root and pollinate the female flowers at midday.

Transplanting Runner Beans. Transplanted Runner Beans are not always the success expected; in most cases this may be traced to the work of transplanting being done in haste. Never plant when the soil is dry; plant with a trowel, spread the roots well out, cover with 4 inches of soil and well water.

Swedes. Those who sowed seeds last month must not neglect early thinning, or the crop will be of little use. Let the seedlings be left at about 8 inches apart, but a few inches more is an advantage.

Cauliflower. Give the earliest plants of these frequent supplies of liquid manure; backward plants that have become somewhat stunted will be greatly helped if watered once a week with nitrate of soda, $\frac{1}{2}$ oz. to 1 gallon of water.

Dwarf French Beans. These well repay frequent waterings, and syringing in the evening of a hot day is beneficial. Manure water may be given to plants just forming their first pods. Nip out the top

of each plant to hasten the development of the pods.

Garden Rubbish. Do not throw away any rubbish that decays readily, but put it in a hole in some out-of-the-way corner to decay, pouring upon it house slops and sweepings from the flue. Later on this may be dug in the ground where Cabbages or winter Turnips are grown.

Vegetable Marrows. Where these are growing on heaps of manure, keep the shoots well regulated, thinning out where very crowded; too vigorous and too strong foliage will prevent the free setting of the earliest flowers.

Large Onions. Nitrate of soda or sulphate of ammonia, used at the rate of 1 oz. to the square yard, assists growth, but on no account exceed this quantity. Peruvian or Canary guano promotes less rapid but very healthy growth. Old soot is a well-known stimulant, but its effect is not so marked as that of one of the other fertilisers. Repeat the application in a fortnight.

Broad Beans. Gather the pods of these as soon as the Beans are of fair size. The tops of backward plants should be pinched out, and wherever possible apply plant food in either dry or liquid form.

Sowing Beetroot. Seed of Globe varieties may still be sown. Give this vegetable a plot which has been deeply dug, and if the soil is light scatter a few handfuls of common salt over the surface before raking down very finely.

Greenfly on Carrots. Greenfly often attacks Carrots early in the present month. Where this pest is seen, measures should be taken to destroy it; if left alone, this will soon ruin a very promising bed.

Syringeing with soapy water or other insecticide is advisable.

Sowing Runner Beans. Make a last sowing in well-dug ground, or, if the soil is light, sow the seed in drills drawn out with the hoe. Allow 6 or 8 inches between the seeds. A single row is likely to give more pods than where several rows are attempted in a narrow trench.

Outdoor Tomatoes. Pay attention to the removal of all superfluous growth, restricting the plants to one stem each. Keep the main stem attached to its support, and avoid overwatering. Tread the soil down firmly if it is loose.

THE GREENHOUSE

***Spiræa japonica*.** Plants in pots that have finished flowering should be planted in good soil in a moist position. They need plenty of water, while an occasional dose of liquid manure will be beneficial.

Zonal Pelargoniums. Plants required for blooming in winter should be put into the pots in which they are to flower. A suitable size is 5 to 6 inches in diameter. When potted they should be stood on ashes out of doors in a sunny spot. The compost must consist mainly of fibrous loam, pressed down firmly. Under these conditions the growths will be short and sturdy. All flowers should be picked off.

Perpetual Carnations. The plants intended for winter flowering will now be better in a cold frame, or even out of doors. Repot into 6-inch pots, in which they will bloom. The ends of the shoots should be pulled out towards the end of June for the last time. If the plants are "stopped" later than that their blossoming will be delayed.

The main part of the potting soil should be turfy soil, adding a little leaf-mould, manure from a spent hot-bed, mortar rubble, soot and bonemeal.

Arum Lilies. By some these are planted out during the summer, and by others they are grown altogether in pots. Planting out may be done now. If kept in pots they may now be placed out of doors and given less water. They will soon go dormant, and should then be kept dry till about the end of July, when they must be shaken clear of the old soil and repotted.

Camellias. Having practically completed their growth for the season, Camellias in pots may be stood out of doors, choosing for preference a position facing west. Three to four months in the open air will not only be beneficial to the Camellias, but give additional space in the greenhouse for other plants.

Fairy Primrose. The Fairy Primrose, *Primula malacoides*, has hosts of admirers. It is the most free-flowering and accommodating of all greenhouse Primroses, blooming from late autumn to spring. Sow seeds now in pots of light soil in a cool greenhouse.

Chimney Campanula. Sow seeds of the blue *Campanula pyramidalis* and the white variety *alba* in a greenhouse or frame. Though a perfectly hardy border plant, the best specimens are grown in a cool or cold greenhouse. As they are hardy, frost does not hurt them in winter, though it is usual and desirable to give the plants the protection of a cold frame.

Winter-flowering Stocks. Sow seed of Beauty of Nice Stocks for winter flowering. The colours

include salmon pink, old rose, crimson mauve, primrose yellow, and white. Raise the seedlings in a cold frame. No artificial heat is required until November, when a little warmth and partly opened ventilators are preferable to a closed glasshouse and no heat.

Tuberous Begonia. The young plants raised from seeds sown in January should be ready for the 5-inch pots in which they are to flower during August and September. Use a compost of 3 parts fibrous loam, 1 part leaf-mould, a little spent manure from a hotbed or a sprinkling of bonemeal and soot, with some coarse sand.

Double Wallflowers. Though hardy plants, double Wallflowers attain their greatest beauty if cultivated in pots for the cool and cold greenhouse. Sow the seeds now on a border outside or in a cold frame. In autumn pot the plants up singly in 5-inch and 6-inch pots. Give them the protection of a cold frame in winter.

Fuchsias. Repot and encourage the growth of the young plants raised from cuttings in spring. Keep all flower buds removed until August. As a potting compost for Fuchsias use 3 parts fibrous loam, 1 part leaf-mould, plenty of coarse sand, and a little decayed manure or bonemeal.

Celosia and Cockscomb. With the removal of numerous plants to the beds and borders outside, more space is available for the rapidly growing plants remaining. Among these *Celosia* and *Cockscomb* deserve particular attention. Their brilliant flowers are valuable in late summer and early autumn. Grow the plants in a warm, moist atmosphere.

Abyssinian Primrose. *Primula verticillata* is essentially a flower for the amateur's greenhouse. It is an accommodating plant, thriving in an almost sunless glasshouse, and a degree or two of frost does no harm to the foliage. Sow the seeds in well-drained pans of light soil, soaking first in warm water for twelve hours. The fragrant yellow blossoms are borne in whorls on upright stalks rising from circular tufts of white mealy leaves.

Hydrangea. Now that the flower heads are developing, encourage progress with liberal supplies of liquid manure. A few of the growths which it can be seen will not produce bloom this year may be taken off and inserted under a bell-glass as cuttings.

Cineraria. Sow seeds in a frame or cool greenhouse. The large-flowered strain and the smaller-flowered star varieties should both find a place in the cool greenhouse. *Cinerarias* thrive best in a position where the frame is sheltered from the midday sun.

Chrysanthemum. As the final potting is completed it will be safe to stand the plants in their summer quarters. Select an open sunny position, e.g., on a gravel walk, where watering, staking and tying can be readily attended to.

Chinese Primrose. Sow seeds of the varieties of *Primula sinensis* and *stellata* early in June for late winter and early spring flowering. The sturdiest plants and best-coloured flowers are those grown in a greenhouse where only sufficient heat is used to keep out frost.

Cyclamen. Seedling plants are growing freely, and usually about this date require moving into 5-inch pots. Use a compost of fibrous

loam, adding leaf-mould, old manure, coarse sand, and a little soot. When potting keep the corms raised above the soil, or, when water is given, moisture will collect in the centre and cause the leaf and flower stalk to decay.

Herbaceous Calceolaria. Sow seeds of these valuable spring flowers in a cold frame. The fine, dust-like seeds require only a light covering of sand. Place a square of glass and a sheet of paper over the pot until germination commences.

Nerine (Guernsey Lily). These should now be on a shelf or stage in the full sun. Gradually withhold water, ventilating the greenhouse or frame freely. Nerines do not require frequent potting. When necessary, August is a suitable time to do this work. Nerines are very easy to grow, and strongly recommended to amateurs.

THE FRUIT GARDEN.

Mulching Fruit Trees. If trees are carrying good crops of fruit it will be found a useful plan to spread a coating of strawy litter over the roots. For trees on walls this will be of especial benefit. Before putting the material in position see that no weeds have been overlooked, and the soil should be thoroughly moistened if at all dry.

Autumn Raspberries. Thin out the weak canes and any that cannot readily be found room for. Tie in just sufficient for covering the supporting wires. Hoe to keep down weeds and to preserve moisture in the soil. Feed with liquid manure to assist vigorous growth. When the canes of these autumn-fruiting Raspberries are weak they cannot be expected to produce fine fruit in abundance.

Melons in Frames. Many plants will soon be in flower. To secure a crop it is necessary to fertilise the blossoms when dry. Choose the middle of a fine day for this and "set" three or four flowers on each plant at the same time by transferring the pollen of one to the stigma of another. When "set" at different times some of the young fruits will fail to swell. "Stop" the shoots at the first leaf beyond the fruit and remove all unnecessary growth.

Thinning Loganberry Shoots. These plants make far too many shoots, and thinning should be done in good time. Leave only sufficient young growths to cover the wires or other support used. Give water in dry weather. To secure extra large berries manure-water may also be given, or failing this give an application of fertiliser and water it into the soil.

Outdoor Peaches. Keep the trees clean and healthy by ample supplies of water and by regularly syringing. The trees ought to be well syringed at the end of each warm day. Tie in young shoots, securing them lightly in position. Do not hesitate to remove any shoots which are unduly crowding others.

Morello Cherries. In regulating the growths and securing the required number in position a good deal of work will be caused. Make sure that aphides do not obtain a hold of the trees, but wash early with some insecticide upon their first appearance. The work should be done while the Cherries are green or there will be difficulty in cleaning them when colouring has commenced.

Watering Fruit Trees. Nearly all fruit trees derive benefit from

copious waterings in hot, dry weather. Give liquid manure once a fortnight to trees carrying heavy crops. If possible mulch young trees to assist in keeping moisture in the ground.

Layering Strawberries. As soon as possible now steps must be taken for layering young plants if they are wanted. If a small bed is set aside for producing layers and those plants are not allowed to fruit matters are greatly simplified. Layering can then be done as soon as layers are procurable, and the results will be much better than if layers are taken from plants allowed to bear fruit.

Young Wall Fruit Trees. Endeavour to look these over and remove surplus growths. Some of the shoots may need pinching back for the formation of fruit spurs. Early attention in this matter may save much pruning in autumn and winter.

Thinning Plums. Do not hesitate to thin Plums if the crops are heavy. Victoria usually carries far too many fruits, and so do some of the other cooking sorts. Belle de Louvain, Monarch, Pond's Seedling and Grand Duke are amongst those that repay thinning. Smaller sorts, such as Orleans and the Gages, rarely need thinning.

Netting Bush Fruits. Almost before the berries of Currants and Gooseberries are changing colour the birds will begin to take toll of them. Place nets over the bushes in good time to prevent losses. Where time can be found it is a good plan to drive in stakes and secure the nets to these so that there is less trouble in gathering the fruit when it is required.

Fruit Trees in Pots. When the crops are gathered the trees may be placed outside. Plunge the pots to their rims in the open or in a bed of ashes. Keep the foliage clean by regularly syringing and make sure that the roots are kept moist.

Fig Trees. These grow and fruit in warm districts if they receive proper attention. Do not allow the growths to become crowded at this time of year. Thin out the young shoots as they are produced.

Care of Grafted Trees. These will need attention, especially if clay has been used for covering. Moisten the clay in dry weather or rub fresh material into any cracks that are found. Do not allow growth from the stock to make too much headway. One or two shoots may be allowed to grow for a week or two, but care must be exercised or the scions will be retarded.

Peaches under Glass. Much attention will now be required among these. The young shoots must be regularly tied in position and side-shoots or laterals be pinched off as they form. Do not hesitate to remove some of the growths should they appear too crowded. Syringing ought to be constantly practised in fine weather if the trees are to be kept clean and healthy.

Canker in Melons. Where plants are liable to collapse from this cause special care must be taken in watering. Lime rubbed lightly on the base of an infected stem will sometimes stop the disease from getting worse. A small heap of sand placed around the stem is also useful. In watering do not allow the stems to be wetted, and there will seldom be any risk from canker.

Thinning Grapes. Always thin from the bottom of the bunches first. Some regard must be paid to the variety dealt with, as some have larger berries than others. Muscats require less thinning than other sorts. Start early, before the berries have become massed together. Take out all small and ill-shaped berries, leaving the largest and best placed.

American Blight. Take measures to prevent the spread of the pest, which is liable to show itself at this season. Many can be destroyed by touching them with methylated spirits, and the crevices on old trees may be served in the same way with petroleum.

JULY.

THE FLOWER GARDEN.

Roses. Flowers which are not cut should be removed from standard and bush Rose trees as they fade. Tepid soapy water makes an effective spray to rid the growths of greenfly. Mildew may be kept in check by spraying with sulphide of potassium, $\frac{1}{2}$ oz. in 1 gallon of water.

General Work. There is an abundance of work for the amateur in the garden, both morning and evening. Watering during dry weather, syringing, and mulching with decayed manure are all beneficial. Faded flowers should be cut off, and many plants require staking and tying.

Transplanting Seedlings. Numerous plants grown for their flowers in spring and summer are ready for removal from the seed beds. These include Wallflowers, Polyanthus, Double Daisies, Arabis, Aubrietias and Perennial Candytuft. Select

positions not too dry or hot, a border facing west or north being usually the most satisfactory.

Nepeta Mussinii. This must be included in a list of the best six hardy border perennial plants for summer flowering. The plants produce a profusion of lavender blue blossoms in summer, making a delightful display. They thrive in most soils and positions, and are readily propagated by seeds sown now, also by division of the clumps in autumn. As an edging just behind Pinks, *Nepeta* is a lovely contrast.

Fairy Wallflower. When treated as biennials the *Erysimums* are amongst the most showy spring and early summer flowers. Sow the seeds thinly on a border outside now, and transplant to the flowering position in September and October. The best sorts include *arkansanum*, bright yellow, 18 inches; *Golden Gem*, golden yellow, 10 inches; *Orange Gem*, orange, 18 inches; and *pulchellum*, pale yellow, 6 inches.

Layering Border Carnations. Get the work of layering completed without delay. Prepare a compost of light, fibrous loam and leaf-mould, placing sufficient round each plant to cover the stems when fastened down with pegs.

Dahlias. Staking, thinning the shoots and tying require attention at least once a week. Watering is necessary during dry weather, while a mulching of decayed manure is most helpful at this stage of growth. Vigorous syringing during warm evenings will check greenfly.

A Showy Campion. Treated as a biennial, sowing the seed now, *Haage's Campion* (*Lychnis Haageana*) is a lovely summer border

flower, 1 foot or more in height ; it thrives well in semi-shade. The colours of the flowers are distinctly rich and vary from scarlet to white, the orange and salmon shades being particularly attractive.

Honeysuckles. Every garden should contain the deliciously fragrant climbing Honeysuckles. Against a wall or fence, on a trellis or arch, over an arbour or veranda, the Honeysuckle is indispensable. *Lonicera caprifolium*, *L. japonica*, *L. flexuosa*, *L. serotina* and *L. belgica* are all distinct, and flower over a long season. They are readily propagated by cuttings inserted now under a bell-glass in the greenhouse or in a cold frame.

Pruning Rambler Roses. As the various ramblers pass out of flower most of the growths which have borne blooms should be cut out. Certain sorts require different treatment. In some—notably Dorothy Perkins—most of the old wood is cut out to the ground ; in others there are portions of large branches to remove. Some, including Alberic Barbier and Elisa Robichon, it is not necessary to prune unless they are too large for their positions.

Summer Starwort. *Aster sub-cœruleus*, growing 1 foot high, is a valuable early summer border flower with violet blue blossoms and a prominent yellow centre. Increase now by cuttings inserted in a cold frame ; often pieces may be carefully pulled from the parent plant with a few roots attached.

Pyrethrum. Both the single and double-flowered Pyrethrums can be readily raised from seeds. Sow now on a prepared border outside, selecting a position sheltered from the midday sun but not shaded by trees. If the seeds are sown thinly

and evenly the seedlings may remain in the seed bed until removed in early autumn to the positions in which they are to bloom.

Border Chrysanthemums. Transplant these carefully to the beds and borders to take the place of Sweet Williams, Canterbury Bells, Foxgloves, Brompton Stocks, and other biennials. Select showery weather for such work, or well soak the plants with water the day previous to removal.

Bush Honeysuckle. This is a good time to insert cuttings of this valuable flowering shrub (*Weigela*) in a frame kept closed or under a bell-glass. Half a dozen good sorts are Abel Carrière, Eva Rathké, *amabilis*, *hortensis nivea*, Van Houttei and *candidissima*.

Pruning Climbers. This is a subject to which attention should be paid during the summer, otherwise the growths become hopelessly entangled in time. *Clematis montana* should be pruned as soon as the blooms are over. Cut back the growths of the *Wistaria*, leaving only young shoots for extension if required.

Gaillardia. This is a suitable time to sow seeds of *Gaillardia* on a border outside. A packet of mixed seeds of a perennial strain may be expected to produce a pleasing variety of colours, including yellow and crimson. The plants thrive best in a sunny position, and flower freely throughout summer and autumn.

Border Pinks. While the most generally practised methods of increasing Pinks are by cuttings, "pipings," and by division of the clumps, their propagation by seeds must not be overlooked. The

colours of the flowers of seedlings vary, and thus give an added interest, and the plants produce a profusion of blossoms. Sow the seed now in a box of sandy soil, placing it in a frame or cool greenhouse. Seeds of Pinks may also be sown on a border out of doors.

THE KITCHEN GARDEN.

Swedes. If the plants are crowded thin them out to 9 inches apart. At this distance roots of fair size and good table quality should be ready in December.

Seakale Beds. Beds of this most useful vegetable planted last spring should have regular soakings of manure-water and be kept free from weeds, otherwise the roots will scarcely be of suitable size for forcing next winter.

Dwarf French Beans. If these are allowed to remain dry at the roots, production comes to an end and the pods lose quality. Keep the soil moist, and to prolong the season remove all pods before they get old and stringy. If the Beans are grown to provide Haricots, keep the foliage healthy by syringing after a hot day. If this is not done insects often spoil the plants.

Diseased Potato Haulm. When lifting Potatoes having diseased haulm, be careful to remove and burn all this immediately for the purpose of preventing further spread of the disease.

Second Early Potatoes. This crop ought now to be ready to take up. If the land is heavy and much soil adheres to the tubers, free them from this as soon as lifted, and do not attempt storing until they are quite dry.

Autumn-sown Onions. These are now approaching the ripening stage. Remove them from the bed and lay

out thinly on sacks, leaving the tops intact until quite shrivelled, then cut away all but 2 inches of the tops. Store in a dry place.

Outdoor Cucumbers. If these are to do well water must be given freely whenever the state of the soil approaches dryness. After the first few fruits are formed, a weekly soaking of manure-water will hasten their development, but care should be taken to keep it off the leaves.

Newly-made Asparagus Beds. More than ordinary care should be taken of beds of Asparagus planted last spring. In addition to keeping the surface free from weeds, use water very freely during this and next month.

Sowing Parsley. A sowing made during the present month is certain to provide fresh sprays late in the year. Rich soil should be selected, and the seed sown sparingly in rows 1 foot apart.

Celery. Plants put out early last month now require liberal waterings. If allowed to remain until the soil is dry and the foliage touches the ground, many of the plants will run to seed instead of forming good hearts.

Maize. If this is being grown for large cobs the grower must on no account neglect to keep the soil moist. Flooding the plants at least once a week with soot-water or liquid manure is well repaid by the increased size of the cobs.

Sowing Peas. As an experiment, a few short rows of such dwarf early varieties as Laxtonian, W. Hurst and Little Marvel may be sown in good ground; sow thinly. Immersing the seed for half an hour in water will hasten germination. Peas sown early last month should have a light mulch of some kind

placed along the sunny side of the row to prevent the too rapid evaporation of moisture. Plants from which the pods have been gathered should be promptly pulled up and the ground filled with something else.

Salt for Beetroot. Artificial watering is not recommended for this crop, but a light sprinkling of salt between the rows not only keeps the soil moist but stimulates growth.

Carrots. Dust these frequently with old soot or wood ashes ; both are of great value to the plants in wet weather, and should a dry period be experienced their use will keep the foliage free from insect pests.

Savoy Cabbage. These should be planted on rich ground and allowed ample room for the development of their large heads. If given a poor soil and cramped for room good heads cannot be expected.

Dwarf Kale. This is of more value to the amateur than the tall-growing varieties, and gives useful heads and late sprouts if put at 18 inches apart each way. Plant at once, and where the leaves are unduly long shorten them by half.

Peas in Flower. Peas having reached the flowering stage should be well supplied with water at the roots and overhead after a hot day. Previous to watering, lightly fork up the soil along each side of the rows, afterwards covering with short manure.

THE GREENHOUSE.

Taking Cuttings. Many greenhouse plants may now be propagated from cuttings of the young shoots. It is essential that they be not allowed to droop, and when dibbled in pots of sandy soil they

must be kept in a closed propagating case, shaded from the sun till rooted. Pelargonium cuttings, exceptionally, do not require to be kept close or shaded from the sun.

Flowering Cacti. The showiest of all are the different kinds of Phyllocacti. These may be stood out of doors from now to the end of August. A sunny spot should be chosen for them, and the plants must be given a moderate amount of water.

Thrips and Red Spider. With the advent of hot, dry weather these pests often give a good deal of trouble in the greenhouse. Thrips are readily destroyed by vaporising with one of the patent insecticides, but a free use of the syringe, especially on the undersides of the leaves, is more effective with red spider. Put 1 oz. of salt in each gallon of water.

Gloxinia. Plants that have passed out of flower will require less shade than when in bloom. They must, however, be watered as before, in order to perfect their growth. As the plants show signs of going to rest they can be more exposed to sun and air. Those that have been kept quite cool will continue to bloom for a considerable time.

"Damping Down." It is very helpful to plants in the greenhouse if the paths and stages are freely moistened in the evening. This will ensure a moist atmosphere during the night, which will benefit the plants considerably and also tend to keep down insect pests.

Zonal Pelargoniums for Winter. These should now be in a spot fully exposed to sun and air. All flower buds should be picked off, and if any shoots show a tendency to

straggle they should be "stopped." This treatment will ensure good, sturdy, well-ripened growth that can be depended upon to flower well.

Old Plants of Cyclamen. These should be shaken quite clear of the old soil and be repotted in a mixture of loam, leaf-mould, broken brick rubble and sand. After this the best place for them is on ashes in a frame facing north, or nearly so.

Climbing Plants. When climbing plants are trained to the roof of the greenhouse they need attention from time to time, otherwise they are apt to get into a tangle that is difficult to deal with. A few minutes should be devoted occasionally to the training of climbing plants.

Scarlet Salvia. Young plants of the *Salvia splendens* may now be potted into 6-inch pots. If grown out of doors during the summer the plants will form good flowering specimens by autumn, when their brightly coloured blossoms are much appreciated.

Winter-flowering Begonia. Young plants raised from cuttings may be put into their flowering pots. The size of these will depend upon the vigour of the plants, but as a rule those from 4 to 6 inches in diameter are suitable. A mixture of loam, leaf-mould and sand should be used, the whole being, if possible, sterilised by heat before repotting is done.

Arum Lilies. Those having been kept in pots in a dry state for some time may now be shaken clear of the old soil and repotted. The compost should consist of loam, with a little well-decayed manure and sand. Little water should be given till growth recommences. They

may be left out of doors for some time yet.

Cape Primrose. Plants of *Streptocarpus* raised from seed sown in warmth early in the year are now established in 4-inch pots and commencing to produce flowers. A great deal can be done to prolong the season of blooming by picking off all old blooms and giving an occasional stimulant. If allowed to seed they will produce few flowers.

Tuberous-rooted Begonias. These should now be at their best, and to keep them in good condition some stimulant is required. Soot-water and liquid manure combined, when clear, are well suited to the purpose. If the plants need staking, care must be taken in doing it not to injure the tubers.

THE FRUIT GARDEN.

Protecting Fruit. As soon as the nets come off the Strawberry beds they will in most cases be needed for bush fruits. Currants, Gooseberries and Raspberries need to be covered in some manner, or birds quickly take a heavy toll.

Summer Pruning. A start can be made with this work. Begin with Apricots, Cherries, Pears and Plums on walls. Harm results when the cutting is too drastic. Cut back the side shoots, or laterals, on the main branches to within six leaves of the base. When cut too hard there is great risk of the lower buds bursting into growth, and when this occurs no benefit is derived from summer pruning.

Summer Care of Vines. By "stopping" the young shoots at two, or at the most three, leaves beyond the bunch a sure beginning is made in preventing overcrowding. This alone is not enough, and the young shoots which

grow out of the axils of the leaves must in their turn be stopped at the first leaf made. This pinching, or stopping, must be continued throughout the season.

Raspberries. In dry seasons it is necessary to give heavy supplies of water to these, as well as thick mulchings of such material as straw and grass trimmings. Unless special care is taken in a dry season the crop will be a poor one, if not an absolute failure.

Pears on Walls. See that trees on walls which are carrying crops are well treated with regard to water and liquid manure. Where there does happen to be more than a fair crop, thinning must be done for the sake of the tree and the future crop.

Strawberry Layers. When the layers have been pegged into pots or turves they will need constant attention in dry weather. They must have water every day. As soon as roots can be seen at the base of the pots the young plants are ready to sever from the old plants. Remove them and stand in a cool, shady position for a few days, when they will be ready for potting on or for planting as required. When the fruit has been gathered, remove the loose straw and litter from the beds. If the runners are not required they should be cut off, raked up and taken away. Hoe the beds and take off all large weeds.

Morello Cherries. Look over these, and tie in sufficient shoots for providing next year's crop. They should be fastened to the wall, those not required being cut close back to the main branches.

Mulching. Young trees which were planted in late spring will suffer unless the soil is mulched. Strawy litter is the finest material

for the purpose, but, failing this, many other things can be used. Grass trimmings, lawn mowings, even early Potato tops which are not diseased may be used to aid in retaining moisture in the soil. Watering previous to mulching will make the work more efficient.

AUGUST.

THE FLOWER GARDEN.

Hollyhock Seedlings. A year may be saved by sowing Hollyhock seeds now ripening on the plants. If a cool greenhouse or frame is available, sow the seeds thinly in boxes, where the seedlings will grow until transplanting time in March. Failing this, sow on a sunny and sheltered south border outside.

Golden Feather. This is one of the daintiest and most effective plants to use as an edging to flower beds and borders. It is worth while raising seedlings now in a cold frame in preference to sowing seeds in heat in spring.

Sowing Seeds of Delphinium. As soon as ripe sow the seeds from the best flowers of the Delphiniums or Perennial Larkspurs. Sow thinly in boxes; the young plants may be kept in a cold frame during the winter, transplanting out of doors in spring.

Primrose and Polyanthus. For various reasons the lifting and dividing of Primrose and Polyanthus is sometimes deferred until the end of August. The weather in June may be hot and dry, other work more pressing, and some of the best sorts are left to ripen seeds. Each clump will, as a rule, divide into three or four pieces. In replanting, work in

some leaf-mould, wood ashes and soot.

Winter Aconite. This is one of the earliest of spring flowers ; an early start is desirable in planting the bulbs. Order them without delay, or, if already in the garden, proceed with the lifting and transplanting. Give the Winter Aconite a permanent position, not too dry ; one of its most satisfactory uses is as a carpet in a thinly planted shrubbery or in a bed of deciduous shrubs.

Ceanothus or Mountain Sweet. Among autumn-flowering shrubs the Ceanothus must find a place. While the bushes thrive and flower freely in the shrubbery border, they attain their greatest beauty when trained against a fence or wall of moderate height. Now is the time to insert cuttings. They root freely under a bell-glass in the greenhouse or in a cold frame. Gloire de Versailles, light blue, is one of the best.

Sowing Snapdragons. Sow seeds of Snapdragons on a sheltered and well-drained border outside where they can stand the winter. Thin the seedlings later when large enough to handle if they are crowded.

Iceland Poppies. In the garden, and for cutting, the orange, yellow and white blossoms are always valued. Select a position sheltered from the midday sun—a north or west border. Scatter the seeds thinly, for preference where the plants are to remain permanently.

The Madonna Lily. *Lilium candidum* may be said to grow in some gardens like a weed, while in others every attention does not lead to success. This is the best time to plant the bulbs. Those flowering

freely should not be disturbed. The bulbs thrive in ordinary garden soil ; they should be covered only with about an inch of soil.

Lavender. This is the season to propagate the fragrant Lavender. Make cuttings of the young growths : 3 to 4 inches is a suitable length. Prepare a bed of sandy soil in a cold frame or under a hand-light. Dibble in the cuttings firmly an inch apart.

Fuchsia. Among summer bedding plants the Fuchsia has few rivals, especially in small, somewhat shaded gardens. Now is the time to insert cuttings. Young shoots a couple of inches long root readily in a cold frame if inserted in pots of sandy soil. A 4-inch pot will hold six cuttings, a 5-inch pot nine cuttings. Failing a greenhouse, pots of rooted Fuchsia cuttings may be safely kept in a window.

Flag Irises. Many growers prefer to transplant the Flag Irises during August. Any ordinary garden soil is suitable. Should the weather be dry following transplanting, water freely. Each clump will divide into several plants.

The Nankeen Lily. *Lilium testaceum* commences to grow in autumn, hence it is desirable to replant the bulbs now. It is one of the best Lilies for the garden, thriving in the herbaceous and shrubbery borders. It is a fragrant flower.

Pansy Cuttings. As a rule the best-named sorts of Pansies produce few shoots suitable for cuttings. It is therefore desirable to make an early start with the choice kinds. The best growths for cuttings are the young shoots in the middle of the plants. These can often be

pulled up gently with a few roots attached. Dibble them on a prepared bed of sandy soil under a hand-light or in a cold frame.

The Dropmore Anchusa. Though this is a hardy perennial, the old roots are not long-lived in many gardens. Certainly the best results are obtained by continual propagation of young plants from portions of the thick, fleshy root. The old plants are dug up now, and the pieces of roots as thick as one's finger or thumb are cut up into lengths of 2 to 4 inches. During the winter a crown forms on the top of each, and when planted out in spring growth develops freely.

Sowing Hardy Annuals. Annuals from seeds sown about this date make strong plants, which flower early, abundantly, and last longer than most of those sown in spring. Useful kinds to sow are Poppies, Larkspur, Godetia, Clarkia, Nemophila insignis, Eschscholtzia, Limnanthes Douglasii, Collinsia bicolor, and the pot Marigold, *Calendula officinalis*.

THE KITCHEN GARDEN.

Burning Garden Rubbish. Any rubbish that will burn easily should be converted into ashes at once. After passing these through a fine sieve, store in a dry place for use next spring.

Outdoor Tomatoes. Pinch out the points of all plants growing in the open garden; those having the benefit of a warm wall may be allowed to set another bunch of fruit.

Late Peas. Where a good row of these is just showing signs of forming flower buds, one of the very best aids to rapid growth is a good soaking of clear water to which has been added sulphate of ammonia at the

rate of a handful to 3 gallons, keeping this away from the foliage.

Vegetable Marrows. Where these are being grown for jam-making purposes it is unnecessary to allow the fruit to remain on the plants until fully ripe. If they are cut and allowed to stand in full sun the ripening process will continue. The plants will then set many more fruits before the end of the season.

Lettuce. This salad should be well supplied with water. Plants of Cos Lettuce now forming hearts must be tied. Make a final sowing of a hardy variety for early spring use.

Endive. Transplant some of the seedlings to a partially shaded spot without delay. Put the plants at least 9 inches apart, and give a good watering.

Globe Beetroot. If the roots have reached a serviceable size it will now be quite safe to lift them and store for early winter use. Storing in a clamp in the open garden is preferable to a warm shed. Lift with a fork, and be careful not to break or bruise the roots.

Earthing Celery. The earliest rows may now have the final earthing up. Before adding any soil make sure that the soil is quite moist. If dry, give a thorough soaking of water, and a few hours later one of liquid manure. Add fine soil as soon as the stems are quite dry.

Frame Cucumbers. From now onwards these will need little ventilation. If necessary it should be given early in the day, the frame being again closed by midday. Otherwise growth will be slow and the quality of the Cucumbers poor. Old plants bearing deformed fruit should be given a top-dressing of rich soil, and tepid water alone

should be used for watering or syringing purposes.

Lifting Onions. Lift the bulbs, and after removing all soil lay them out thinly to get them well ripened. Allow the tops to remain on the bulbs until they are quite brown and easily twisted off.

Late-sown Carrots. Carrots sown early last month must be well supplied with water during hot weather. Whatever thinning has to be done should be done when the soil is moist or just before a shower.

Lifting Shallots. Even the latest bulbs will now be sufficiently advanced for lifting. Avoid storing Shallots packed tightly in any airtight receptacle.

Buda Kale or May Green. This is one of the most useful of all Greens for early spring, and a few rows should be got in at the earliest opportunity; the plants suffer less from transplanting in a large stage than many others of this family.

Spring Cabbage. Make a final sowing. If the seed is sown thinly on good soil, the plants should be just at the proper stage for transplanting when frost has cut down some of the more tender vegetables.

THE GREENHOUSE.

Cyclamen. This is a very good time to sow seed of the different varieties of Cyclamen. It is best sown in clean, well-drained pans in a mixture of equal parts of loam and leaf-mould, with some sand. Do not crowd the seeds, as they germinate irregularly; the forward seedlings may then be lifted and potted without disturbing the rest.

Cuttings of Zonal Pelargoniums. Cuttings of these taken from the flower-beds will strike root much more readily during August than a

month later. If the work is carefully done many cuttings may be taken without disfiguring the beds in any way. Whether put in boxes, pans or pots, the cuttings will strike root readily out of doors at this season. They do not need shading.

Cape Primrose (*Lachenalia*). The bulbs that have been resting may now be shaken clear of the old soil and repotted. They may be grouped in flower-pots or pans, according to fancy, or they are seen to considerable advantage in hanging baskets. A soil mainly consisting of sand and loam is suitable.

The Oleander. Though it requires the protection of a greenhouse during winter, this showy flowering shrub may be stood outside in a sunny spot in the summer. It is a moisture-loving plant, hence must be watered freely, with occasional doses of liquid manure. Sometimes shoots are produced just below the flower clusters. These must be removed, otherwise they will starve the blooms.

Freeseias. The bulbs that were kept dry after the leaves died down must now be shaken clear of the old soil, graded as to size and repotted. Of first-sized bulbs, seven in a pot 5 inches in diameter form an effective clump. The apex of the bulb should be half an inch below the surface of the soil. Place in a frame, and give little water till growth recommences.

Repotting Primulas. There are several Primulas of great service for winter and early spring flowering in the greenhouse. Chief of them are *Primula sinensis*, *obconica*, *malaoides*, *floribunda* and *kewensis*. The most forward plants resulting from seeds sown last spring are now

ready to put into their flowering pots of $4\frac{1}{2}$ to 5 inches in diameter. A mixture of loam, leaf-mould and sand will suit them well. Some of the later ones will flower in 4-inch pots.

Hard - wooded Plants. The different hard-wooded plants, such as Azaleas, Heath, Epacris, etc., that are stood out of doors during the summer need particular attention. They are liable to injury if the soil gets too dry, and in hot, windy weather this may soon happen. It is therefore necessary to keep a sharp look-out during such times, and if the pots can be plunged in ashes or coconut refuse so much the better.

Agapanthus. At this season of the year the pretty blue flowers of the Agapanthus, or African Lily, are much admired. The plants are frequently grown in large pots or tubs. If it is desired to increase the stock, and it is not convenient to divide the large plants, seedlings can readily be raised. For this purpose the flowers should be fertilised on the mornings of sunny days. These seeds will ripen out of doors, and if sown in the spring will soon germinate.

Cuttings of Bedding Plants. The cuttings of various bedding plants should be taken without delay. Most of them will need to be kept close and shaded till rooted.

Malmaison Carnations. As the layers of these Carnations form roots they should be put into 4-inch pots. When it is definitely ascertained that they are fit for removal the stems connecting them with the old plant should be severed a few days before they are lifted. Pot in a soil mainly consisting of loam and

sand, and keep close and shaded till established.

Achimenes. As these go out of bloom and the leaves commence to turn yellow less water will be required. It must not, however, be discontinued until the plants are totally dormant, and even then the soil should not be too much parched up, as the small rhizomes are liable to suffer if kept too dry. They winter best in the pots in which they are grown.

Nerine or Guernsey Lily. Where these beautiful autumn-flowering bulbous plants have been kept dry throughout the summer, the earliest of them are now pushing up their flower spikes. As soon as these are seen the pots should be placed in a pail of water to moisten the soil thoroughly, and must be kept moist afterwards. If watered before the flower spike can be seen some of the bulbs will not bloom.

Perpetual-flowering Carnations. If these have been out of doors during the summer months they should without much delay be taken under glass. The pots must be cleaned and the plants thoroughly examined for slugs and insect pests before taking them into the greenhouse. A dry, airy atmosphere is necessary to their well being.

THE FRUIT GARDEN.

Strawberries in Pots. If it is intended to grow Strawberries in pots there should be little delay in getting the plants repotted from the small to the large pots in which they are to bear fruit. Turfy soil, with a little decayed manure and a sprinkling of bonemeal, makes a good compost.

Mildew on Grapes. In vineries where a number of plants have to be

grown there is always danger of mildew starting during the dull weather. Should any white, powdery spots appear upon the foliage of the Vines they ought at once to be dusted with sulphur.

Budding Fruit Trees. The work of budding can be carried out now. Where grafts have failed to start and young shoots have been allowed to grow there will now be a good opportunity of filling up gaps. When budding young trees the buds should be worked on the stocks a few inches from the surface soil. Choose firm buds from medium-sized shoots and not those from very vigorous ones.

Early Apples. It should be remembered that the early dessert Apples do not store well. They ought to be used almost at once after gathering. The texture and flavour deteriorate so quickly after the Apples are picked that they are best consumed quickly. All the early sorts are tender and readily show the results of rough handling.

Planting Strawberries. If layers were put down early they should now be ready to plant out to form a new bed. Strawberries require firm, rich land. Plant in rows 24 inches apart, the plants being 18 inches from each other in the row. If possible plant during showery weather, or water well to give them a good start.

Pruning Loganberries. When all the berries have been gathered, have the old canes cut away at once. Every care should be taken of the young canes of this year's growth, as these will produce next season's crop. Dispose them thinly over the space available after cutting out the old canes, and secure

them so that damage cannot be caused by rough winds.

Summer Pruning. Early August is the best time for the general summer pruning of fruit trees in the open. The growth has now to some extent become hardened, and it will be found that the shoots are not so liable to make fresh growth after being "stopped" as they are when the work is done earlier. Begin pruning at the top of large trees. All shoots not required to extend the branches should be "stopped" just above the sixth leaf.

Pruning Black Currants. As soon as the crop is gathered it is a good plan to look over the bushes and remove some of the older growths. This will encourage the young shoots and give them more room for development.

Melons in Frame. The crop should now be approaching maturity. Take advantage of sunny days to help the fruits, closing the frame early each afternoon, and keep the plants rather drier. Less syringing will be needed, but watering must still have attention. Have the fruits raised near the glass; they must not be shaded by the foliage.

Cherries. As the trees become clear of fruit have them thoroughly cleared of insect pests. They are liable to become troubled with aphids when the fruit is ripe, and until this is gathered it is not possible to destroy the insects, but the work must not now be neglected.

Worn-out Strawberries. When they have been bearing for four or five years Strawberry plants cannot be expected to give satisfactory results. It is best to clear them off

and prepare the ground for a more profitable crop.

Summer Pruning Red Currants.

The side growths may be shortened to six leaves. The main shoots should be only slightly shortened. A good deal of aphid can be got rid of in this manner at times. Net those bushes on which the fruit must be kept for some time. If very late Currants are desired, tie a mat closely round the bushes, and the fruits will be found to keep fresh some weeks longer than if netted in the usual way.

Pruning Raspberries. Get the old canes cut out of these as soon as possible. Weakly canes of this summer's growth and those badly placed may also be cut out. It is wise to get this work done now.

Fruit Gathering. It is important that all fruit should be gathered dry. This is particularly the case with that which is required for preserving. Avoid bruising the fruit when picking, or it will not keep in the store.

Fruit Trees in Pots. Place these outside as the fruit is gathered from them. Give the roots a thorough watering and cleanse the foliage by means of clean water rather forcibly applied. Plunge the pots in ashes, or the soil of the garden, to save watering.

Grapes Ripening. Where Grapes are colouring give the Vines every assistance. Ample supplies of moisture will be needed and several weak doses of liquid manure. To ensure good colour in the berries a free circulation of air must be allowed, taking care that the glass-house is warm and dry during dull, damp weather. When Grapes are grown in an unheated greenhouse the atmosphere must be kept dry.

SEPTEMBER.

THE FLOWER GARDEN.

Planting Snowdrops. September is the best time to plant Snowdrops. In company with the Winter Aconite they are the first hardy flowers to blossom early in the year. Dibble the bulbs in 1 inch apart, 2 to 3 inches deep, and leave undisturbed for some years.

Doronicum or Leopard's Bane.

This is a useful hardy border perennial for spring flowering. *Austriacum* (1½ feet) and *Harpur Crewe* or *excelsum* (2½ to 3 feet) are the best. Lift, divide and replant the roots now. *Doronicums* thrive in ordinary soil in sun and shade.

Blue Beard Salvia. *Salvia Horminum* is a splendid hardy annual. Self-sown seedlings come up freely in the borders, where their rich dark purple colouring is attractive for a long period in summer. The plants grow about 1 foot high. There are pink and white varieties, but where only one can be grown let it be the purple. Sow now.

Sowing Sweet Peas. The best Sweet Peas are those grown from autumn-sown seeds, though a second sowing in the spring is desirable to prolong the flowering season. Sow seeds singly in small pots or several round the edges of larger pots. Keep them out of doors for a month; place in a frame for the winter. Keep soil reasonably moist.

Grape Hyacinth (Muscari). The bulbs have a very short period of rest, and should be planted not later than the middle of September. Plant them 1½ to 2 inches deep and 2 to 3 inches apart. Unless increase of stock is required replanting is not necessary for some years.

The Bunch Narcissus. Though better known as greenhouse bulbs, the *Polyanthus Narcissi* should be largely grown in sheltered positions outside. They are seen in their greatest beauty at the foot of a south or west wall, planted in a well-drained loamy soil. Their perfume is delicious. Six of the best sorts are Alsace, Elvira, Gloriosa, Grand Prima, Soleil d'Or, and White Pearl.

Sowing Poppies. Of hardy annuals the Poppies are the easiest to grow. Having manured and dug the ground, tread and rake it moderately firm and level. Sow the seeds where the plants are to flower as Poppies do not transplant successfully.

Double Daisies. In the spring garden these are indispensable; they are doubly valuable in town and suburban gardens. This is a convenient and suitable time to lift and divide the clumps. Work in a little fresh soil, leaf-mould or decayed manure. Useful named sorts are Alice (pink), Rob Roy (crimson), Snowball (white), Giant Double Pink and Giant Double White.

Iris reticulata. This dainty little Iris commences to flower in warm, sheltered nooks during February. Planting should be done in September. Cover the bulbs with an inch of soil and put them 2 inches apart. The violet-coloured blossoms have a bright yellow throat and are deliciously fragrant.

Lyre Flower. The Lyre Flower (*Dicentra*) should find a place in every garden. It thrives best in a shady border and among Ferns, providing the soil is not too dry. Now is the time to plant as well as to lift and divide the clumps. It

grows some 2 to 3 feet high, and the dainty drooping pink and white flowers are borne on arching sprays.

Planting Daffodils. September is the best month to plant bulbs of Daffodils. Later-planted bulbs will flower, but they will not be so vigorous or the blooms of such good quality. Cover the bulbs with from 2 to 4 inches of soil, giving more covering in light soils.

Cuttings of Shrubs. This is the best time for the amateur gardener to insert cuttings of shrubs in a cold frame. Cuttings may be put in of Forsythia, Diervilla, Philadelphia, Flowering Currant, Hydrangea, Deutzia, Honeysuckle and Clematis.

Spanish Iris. The Poor Man's Orchid is an appropriate name for the flowers of this bulbous Iris. Ordinary garden soil is suitable. Plant the bulbs now 2½ inches deep and 4 inches apart.

Glory of the Snow. *Chionodoxa* is an early spring-flowering bulb for every garden. It is easy to cultivate and very hardy, and the bulbs may be left undisturbed for years. They increase rapidly by offsets and self-sown seedlings. *Luciliæ* (sky blue), *gigantea* and *sardensis* (deeper blue) are all charming. Plant 2 to 4 or even 6 inches deep and 2 inches apart.

THE KITCHEN GARDEN.

Winter Turnips. If the rows sown recently are to be a success, early thinning is of the greatest importance. A minimum space of 6 inches should be allowed between the seedlings.

Cabbage Sprouts. If the summer Cabbages are now cut and only bare stumps remain, do not destroy these; warm, showery weather will cause new shoots to develop.

Winter Spinach. On light soil seeds of the Victoria or Prickly variety may still be sown. If the ground is dry the drills should be well watered; or, if more convenient, allow the seed to be covered with tepid water for twenty minutes previous to sowing.

Cauliflowers. These appreciate plenty of moisture at the root; if the plants get dry at the root the heads will often turn "blind." Whenever possible give manure-water, also keep the soil frequently stirred with the hoe.

Storing Onions. Store these with great care, handling the bulbs as little as possible. They may be tied in bunches and suspended from the roof of an outhouse or shed, or the Onions can be stored on a temporary frame made of narrow strips of wood; these allow air to pass freely around the bulbs and improve their keeping quality.

Late-sown Beetroot. If seed of Globe Beetroot was sown in late July and early autumn, the plants will continue to grow for some weeks longer; if they are still small a little fertiliser will be helpful.

Spring Cabbage. Continue to plant out seedlings at 6 inches apart in any spare ground; they will provide many dishes of useful Greens early next spring.

Lettuce. Fill the frame with half-grown plants of a good Cabbage variety of Lettuce, providing rich soil. Encourage quick root action by frequently watering with tepid water, and after new growth is made remove the "light" each day until frost renders a covering of some kind desirable.

Lifting Carrots. Where the main sowing of these was made in April the roots will make no further

growth, and to prevent their splitting, lift and store them for the winter. This is doubly important where the soil is heavy.

Turnips for Spring Greens. If the tops of Turnips are valued as a vegetable in early spring, a sowing of almost any variety made during this month will be satisfactory. Sow on fairly good ground, thinning the plants to a few inches apart in the row.

Broad Beans. Do not pull these up by the root; a far better plan is to cut the plants down to within a few inches of the soil. If dug into the ground they will soon decay and form a useful fertiliser for following crops.

Lifting Potatoes. If the soil is heavy there is no advantage in allowing the maincrop Potatoes to remain undug. Select a day for lifting when the soil is dry or a strong wind is blowing; it is important that tubers intended for winter use should be quite free from soil before being placed in sacks or tubs.

THE GREENHOUSE.

East Lothian Stocks. Seedlings of these may be pricked off into pots or boxes of loamy soil. When large enough they should be put in small pots and kept safe from frost. As soon as the small pots are filled with roots the plants may be put into 5-inch pots, in which they will flower during spring.

Narcissi. Daffodils readily lend themselves to pot culture. The bulbs should be put several together in a 6-inch flower-pot, then placed out of doors and covered with coconut refuse or ashes that have been exposed to the weather. They will then root freely, and when growth begins should be taken into

the greenhouse. Other bulbs to grow in pots are Tulips, Crocuses, *Scilla sibirica*, Muscari, *Chionodoxa*, etc. When potted they should be watered and stood out of doors before covering them with ashes or coconut refuse till they are well rooted, when they may be taken under glass.

Lilium auratum. As this Lily goes out of flower special care should be taken of the bulbs. When the blossoms are over the plants should be placed out of doors, keeping them watered as before till the leaves turn yellow and drop. Then the stems may be cut down and the pots put in a cold frame where they are safe from frost. The soil should be kept very slightly moist, and in early spring the bulbs may be repotted.

Taking Plants under Glass. Preparations must now be made to remove the more delicate plants, that have been out of doors during the summer, into the greenhouse. The pots should first be thoroughly cleaned and closely examined for slugs or other pests.

The Scarborough Lily. This bulbous plant (*Vallota purpurea*) is now pushing up its spikes of bright red lily-like blossoms. When in this stage more water will be needed than before. It is essential that the pots be effectively drained. When the blossoms are over the plants must not be dried off, but placed in a light position in the greenhouse and enough water given to keep the soil slightly moist.

Golden-flowered Arum Lilies. These require quite different treatment from the white Arum Lily. At this season the leaves commence to turn yellow, when less water must be given, and when all leaves have

died off the soil should be kept dry. They commence to grow in the spring, when the tubers must be shaken clear of the old soil and repotted.

Herbaceous Calceolaria. Seedlings that are sufficiently advanced may be put singly in small pots, while the earliest can be shifted into larger pots; light rich soil is essential. Fumigate the frame with Autoshreds to destroy greenfly.

Auricula. At this season of the year these beautiful spring-flowering members of the Primrose family need more careful watering than in the summer. The soil must not, however, be allowed to get really dry.

White Arum Lilies. If these were planted out of doors during the summer, under which conditions they grow freely, they should now be lifted and repotted. The size of the pot will, of course, depend upon the vigour of the plants. The soil should be of loamy nature, and a little well-decayed manure and sand should be added. After potting, let the plants have a good watering and frequent syringing for a time. They must also be shaded till the roots are established.

Gloxinia. The plants are now going to rest. This is shown by the leaves turning yellow and then dying off. As soon as the foliage changes colour less water should be given, and when the plants are quite dormant it may be discontinued. The tubers are left in their pots, or if economy of space is a consideration they can be turned out and laid thickly in boxes of dry, sandy soil.

Amaryllis (Hippeastrum). These showy flowering bulbous plants have now completed their growth,

or nearly so. This is shown by the leaves turning yellow and ultimately dying off. The water supply must be lessened, and when the bulbs are dormant discontinued altogether. During the winter the bulbs, which must remain undisturbed in their pots, should be kept in a temperature of 45 to 50 degrees.

THE FRUIT GARDEN.

Gathering Apples. Nearly all early sorts are ready to gather now. It is a mistake to allow them to remain too long on the trees, as there is then a risk of their falling. They are easily bruised, and do not keep when this happens.

Pruning Black Currants. The bushes should be now looked over to see if any of the old growths can be cut out to make more room for the young shoots which have grown up from the base.

Pruning Morello Cherries. Directly the fruit is cleared from the trees get them pruned. Shoots which have borne fruit should be cut out in so far as there are new shoots to replace them. It will be found better to do the work now than later when the leaves have fallen, because it can be seen how much space the branches occupy.

Grease Banding. At the beginning of October the work of placing grease bands round fruit tree stems should be done. This is for the purpose of trapping the female winter moths. The efficient use of bands smeared with cart grease or one of the special preparations may be the means of avoiding expensive sprayings in the spring.

Young Fruit Trees. Pay special attention to the formation of young trees. Allowing too many shoots to develop or letting them cross each other may cause them to become

unshapely. While the foliage is still upon the branches is a better time for the work than later when the leaves have fallen.

Care of Early Apples. Some of the Apples we have to gather at this season need very careful handling—Ecklinville, Stirling Castle, and all the Codlin class. These are all tender-skinned sorts, and quickly show signs of rough treatment. To drop such Apples into the baskets or to throw them about in any way can only result in damage.

Ripening Grapes. See that Vines have a thorough soaking of clear water where the crop has commenced to colour. In dull, sunless seasons it is advisable to use artificial warmth at night if possible to assist the ripening process. Give all the ventilation practicable during the day-time, and close the glasshouse before the sun has ceased to shine upon it if artificial warmth is not available.

Newly planted Strawberries. Plants recently put out will need special attention. All runners must be removed as soon as formed. Keep down weeds, and assist the plants to make all the growth they can. Water must be given during dry weather. Hoe frequently, and give light dressings of soot or artificial manure.

Planting Morello Cherries. These can be grown in what to many fruits would be an unfavourable situation. On a north wall Morello Cherries are quite satisfactory, and with proper attention will give abundant crops. They can also be grown as half standards in the open. Lime rubble or other materials needed at planting time for these trees should now be got in readiness.

OCTOBER.

THE FLOWER GARDEN.

Tuberous Begonias. Lift these valuable summer bedding plants, packing them close together in shallow boxes. To complete the drying off, place them for a time in a light, airy shed or cellar. Look over the plants occasionally, removing all decaying leaves and stems. Store the bulbs in sand in winter.

Fuchsias. Lift the plants from the beds and borders, placing them for a week or two in an open bed, where, without water, the foliage and flowers will gradually fall and growth cease. Towards the end of November move the plants to their winter positions in a frost-proof shed or cellar or cool greenhouse.

Polyanthus. Good results may be looked for in spring if the Polyanthuses are transplanted to the flowering positions by the end of October. The plants then make fresh roots in the new soil before the coldest weather.

Cuttings of Roses. At intervals from now onwards for some six weeks cuttings of the hardier Roses may be inserted on a prepared border outside. Moderately light soil is desirable, spreading sand over the surface so that it will fall in the shallow trenches as these are prepared for the cuttings. Such popular sorts as Caroline Testout, Madame Abel Chatenay and Frau Karl Druschki thrive well on their own roots, so too do most of the well-known Rambling, Climbing and Pillar varieties, and, in fact, any free-growing sorts.

The Mixed Flower Border. A fair proportion of hardy border plants benefit by being lifted, divided, and replanted in alternate years ; others

thrive for four or five years without disturbance, while a few are left for as long as ten years. The average period may be taken as from four to six years. Provided they are growing and flowering abundantly, it is not desirable to disturb such plants as *Lilium candidum*, *Kniphofia*, *Gypsophila*, *Oriental Poppies*, and *Everlasting Peas* (*Lathyrus*). It is quite easy to trench the ground round these, working in a little manure in the soil. There are several objects in view in lifting and dividing the clumps. It is the most generally practised method of increasing perennials. The tufts increase in size, some more rapidly than others, the growths become crowded and fail to reach their normal beauty—hence the necessity for transplanting. When lifting and splitting up the clumps, the outside portions are as a rule the most healthy. When vigorous plants have impoverished the soil it is desirable to lift the roots, deeply dig, and manure the ground.

London Pride. As a permanent evergreen edging to shady borders *Saxifraga umbrosa* has few rivals. October is a suitable season to lift and pull the clumps apart. Pieces with a few roots attached soon take hold.

Calceolaria Cuttings. Insert cuttings of the yellow and brown bedding *Calceolarias*. Choose sturdy shoots 2 or 3 inches long, which will be found on most of the plants at this season. Dibble them about 2 inches apart in boxes of sandy soil or under a hand-light on a sheltered border.

Pentstemon Cuttings. These can be propagated by cuttings in autumn. Prepare a bed of well-drained sandy soil in a cold frame.

Make it firm and level, with a thin layer of sand on the surface to trickle in the holes when dibbling in the cuttings about 2 inches apart. Water them as soon as inserted, and keep the frame closed until rooting begins.

Viola Cuttings. Maggie Mott, Primrose Dame, and Marchioness are excellent sorts. At present there are plenty of young growths on the plants. These can often be pulled away with a few roots attached. Insert them on a border facing west, 3 inches apart in rows 4 to 6 inches from each other. Remove all flower buds for the next six months.

Winter Violets. Violets should now be in a frame if winter flowers are wanted. When lifting the plants, transfer them with large balls of soil to a frame facing south, keeping them near the roof glass. Plant firmly. If the weather is bright and sunny, shading for a few days will be desirable.

Planting Border Carnations. The layers may now be severed from the old plants. Growers in some districts transfer the young plants to the final positions now. Others find it desirable to pot up the rooted layers, keeping them in a cold frame during the winter and planting out of doors towards the end of March.

THE KITCHEN GARDEN.

Lifting Potatoes. Potatoes still in the ground should be lifted; neglect to do this now may mean loss of tubers through decay after they are stored.

Jerusalem Artichoke. In districts where strong gales are prevalent it is an advantage to shorten the stems, or many may be blown over; cutting down almost level with the

ground should be deferred until next month.

Winter Lettuce. Plants intended for winter use should be planted in order that full advantage may be taken of the few weeks of "growing" weather still remaining. Lift each plant with a good ball of soil, and give a thorough watering immediately afterwards.

Storing Vegetables. Every effort should now be made to get Potatoes stored quickly. Carrots also will be better if stored; they may split if left in the ground. Beet may be lifted at any time now, but Parsnips will be better if left.

Sheltered Positions for Vegetables. If a wall or wooden fence keeps one part of the garden unusually warm and free from cold winds, utilise that part for Lettuce, Endive, or Parsley. In such positions plants often pass unharmed when others in an exposed place are killed.

Autumn Cauliflowers. Cauliflowers will now form heads quickly. To avoid a glut and to prolong the season, loosely tie the leaves over the heart as the plants "turn in." This will not only protect them, but will also help them to keep in good condition longer.

Winter Beans. Gather all kinds of Runner and Dwarf Beans as soon as they are ready to pick. Those not wanted for use now or that cannot be marketed should be salted down. Those too far developed for this purpose can remain on the plants and be dried and used as Haricot Beans.

Seed Potatoes. Examine all Potatoes now stored in boxes for "seed" purposes. Many which at the time of lifting appeared sound may now be showing signs of disease

or decay. If such are allowed to remain others will become affected.

Swedes. These will be quite safe in the open ground for some time, but if many of the lower leaves are yellow or show signs of decay it will be an advantage to gather and burn them. If the roots are still rather small a thorough stirring between the rows with the hoe will assist them to make further growth.

Leeks. It is a mistake to commence using these early in autumn while other less hardy vegetables are abundant. Watering with liquid manure will be of great benefit. The plants will keep growing throughout the winter unless there are frosts of unusual severity.

Autumn-sown Cauliflower. Even in the most sheltered gardens Cauliflowers from seed sown last August should no longer be allowed to remain in the open without protection. Either cover the bed with a garden frame or lift some of the strongest plants and plant them under a warm fence or where a little protection can be given when severe frosts are likely.

THE GREENHOUSE.

Filling the Greenhouse. For safety's sake the different greenhouse plants that have been out of doors during the summer must now be placed under glass. First wash all flower pots and search for slugs and other pests, as with the protection of the greenhouse they will rapidly increase and soon do mischief.

Ventilating the Greenhouse. Plants that have been out of doors for some months must not be kept too close after being placed under glass. A free circulation of air should be kept up during the day, and a little at night if not too cold

Watering. As the days shorten and the nights get colder it is much better to water the plants in the morning. By so doing any superabundant moisture will dry up before the house is closed for the night. Of course, the plants must not be so freely watered as during the summer.

Old Fuchsias. When nearly all the leaves have fallen, old plants may be wintered safely in a shed from which frost is excluded. Give the soil a thorough watering, place the pots close together, pack straw or similar litter between them 1 foot deep above the rims, and the plants will keep safely. Open wide the doors, windows or shutters in mild weather.

Perpetual-flowering Carnations. By this date there will be many shoots available for insertion as cuttings. Place them in pots of sand in a propagating case in the greenhouse. Stake the flowering stems of established plants, and be careful about the watering, as the soil will not dry as quickly now as it did in August.

Chrysanthemum. The flowers are rapidly developing, and care must be taken that they are not injured in any way. If the atmosphere is too moist the blooms are apt to damp off, while earwigs soon do a considerable amount of injury. No further stimulants will now be necessary. A free circulation of air should be kept up.

Ferns. The different greenhouse Ferns will not require so much water as they did when growing freely. At the same time it is essential that the roots be kept moderately moist. If too dry, thrips are apt to attack the foliage. Weevils, too, sometimes disfigure

the fronds. These pests, which are in the form of little blackish beetles, must be sought for after dark.

THE FRUIT GARDEN.

Transplanting Fruit Trees. It may be necessary for various reasons to move trees from one part of the garden to another. Have everything in readiness for the work. Take up the roots with great care. Should any be broken in the process, cut off the damaged pieces. The positions the trees are to occupy must be made wide enough to take the roots without cramping them.

Top-dressing. The surface soil in time becomes poor. This can be remedied by removing the old soil down to the roots and replacing with fresh. It is not always possible to do this with fresh loam, but the top soil of the garden, with the addition of basic slag, will answer admirably. A little manure from the stables, with wood ashes and bonemeal if procurable, will work wonders at times upon old trees.

Pruning Wall Fruit Trees. Old trees which have been neglected ought to have early attention. Thin out or cut back long fruit spurs which do not crop satisfactorily. The work must be done gradually, a few spurs only being dealt with annually. The trees soon become greatly altered for the better in appearance and in cropping capacity.

Forms of Fruit Trees. It is usually advisable for the amateur to secure trees which are to some extent trained. From the point of view of saving time it is wise to obtain trees of not less than two or three years' growth. For covering space there is nothing like the cordon, especially where walls

have to be covered quickly. Bush trees are extremely useful in small gardens, and standards are just the reverse.

Crowded Fruit Trees. When the fruit has been gathered, and when the leaves have turned yellow, though before they have fallen, it is a good plan to prune bush and pyramid trees. All thickly placed branches and those crossing each other should be cut out. After a heavy crop many branches are pulled down out of place by the weight of the fruits, and need pruning back in consequence;

Root Pruning. During the next week or two this work can be done to the best advantage. The sooner after this date it is carried out the better. The trees will soon become re-established, and the results will be more satisfactory than when the work is left until later. Remove sufficient soil to allow of any thick, deeply descending roots being cut back. Sprinkle basic slag with the soil, and make firm.

Fruit Trees in Grass Orchards. The soil round trees should be kept clear of grass for some years after planting. When the turf is allowed to grow unchecked there the growth of the trees becomes stunted. For at least six or seven years the trees need this attention.

Propagating Fruit Bushes. There is no better time than the present for inserting cuttings of Gooseberries and other bush fruits. The young shoots used for cuttings should be from 1 foot to 18 inches in length, and all but four or five buds at the top should be removed, except in the case of Black Currants, when all buds must be left. Place them 4 inches apart in rows 12 inches from each other, and make the soil

firm at the base. Most, if not all, will form roots and grow into useful bushes.

Cordon Fruit Trees. When planting fruit in small gardens the value of the cordon form of tree should not be forgotten. Cordon Apples and Pears are of special importance, and even the Gooseberry is valuable for planting as a cordon on low walls and fences. Cordon trees can also be planted in the open and trained to wires. This adds to the expense, but really fine fruits of both Apples and Pears can be grown by this method.

Renovating Old Fruit Trees. Fruit trees as they become older gradually exhaust the soil in which they are growing. There are two ways of renovating them. Either the soil can be removed down to the roots and be replaced by fresh, to which has been added basic slag or bonemeal, or the trees can be given strong liquid manure once a month during the winter months.

NOVEMBER.

THE FLOWER GARDEN.

Protecting Plants. Coal ashes are useful for placing round the bases of plants requiring protection in winter, such, for example, as *Kniphofia*, *Salvia patens* and perennial *Lobelia*. It is desirable to have material ready to protect shrubs known to be somewhat tender. These include the Lemon Plant or Scented Verbena, Myrtle, *Hydrangea*, *Veronica speciosa*, *Ceanothus Veitchianus*, and some of the *Escallonias*. Bracken, Michaelmas Daisy stems and Yew branches are suitable.

Planting Roses. November is the best month to plant Roses. In

most seasons garden soil is in suitable condition for planting at this date; the plants commence to make fresh roots if the weather is mild, and they are settled in the new positions by the time growth commences in spring.

Planting Star of Bethlehem (*Ornithogalum*). This is an ideal plant for small gardens. Now is the time to plant the bulbs, 4 to 6 inches deep. They thrive in most positions and in nearly all soils. *O. nutans*, with spikes of greenish white blossoms, and *O. umbellatum*, with flat heads of starry white flowers, are the best.

Seasonable Work. Clear off the remaining dead stems from herbaceous perennials. Fallen leaves which cannot be readily dug into beds and borders should be stored in a convenient corner to decay for future use.

Planting Shrubs. November and early December is the best time to plant most flowering shrubs, such as *Philadelphus*, *Spiræa*, *Forsythia*, Flowering Currant, *Deutzia*, and Lilac. See that the ground is deeply dug previous to planting.

Planting *Spiræas*. The newer varieties of *Astilbe*, or *Spiræa Arendsi*, are particularly handsome, and should be widely planted. They thrive on a north border, in partial shade, in the bog garden, and by the waterside. *Ceres* (rosy lilac), Pink Pearl (pale pink), Salmon Queen (salmon rose), and Vesta (lilac rose) are some of the best. The plants grow 2 to 3 feet high.

Stocks for Roses. Those who contemplate budding a few Roses in July should secure and plant the necessary stocks without delay. In country districts Briers are often

obtained from the hedgerows ; failing this, secure them from the nurseryman.

Dividing Arabis. This is the season to transplant Arabis. Old plants may require lifting, dividing, and replanting ; those raised in spring should be planted in the positions in which they will bloom.

Planting Anemones. The St. Brigid Anemones may be planted now. Rich light soil is best, a dressing of leaf-soil at planting being beneficial. Plant the roots 3 to 6 inches apart, according to their size, and cover with about 2 inches of soil. To provide a rich carpet of colour these Anemones are unequalled.

Replanting Lily of the Valley. Though this plant is left undisturbed in some gardens for many years, large and better flower spikes are produced when replanting is done at intervals of four or five years. Replanting a portion of the bed each year is best. Work in plenty of decayed leaf-mould and old manure. Dig the ground deeply. Select a north or west border for preference.

Lifting Dahlia Roots. Flowers are so cheerful in the garden now the days are short that one hesitates to lift Dahlia roots when the plants are still blooming in sheltered positions ; but frosts will soon spoil their beauty. Store the tubers safely in a frost-proof shed or cellar after lifting. Place on the floor and sprinkle moderately dry leaf-mould or sand amongst them.

Planting Crown Imperial. The yellow and copper red blossoms of *Fritillaria Imperialis* are a familiar sight in the old-fashioned garden in early summer. This is a handsome border plant of easy

cultivation. Plant the bulbs now, and place a layer of sand beneath and above them.

Window-boxes in Winter. Having cleared the boxes of their summer flowers, they should be furnished again for the winter. For boxes facing south and west, Wall-flower, Polyanthus, perennial Candytuft, and Viola are suitable, with, possibly, a sprinkling of spring-flowering bulbs. In north and east positions hardy shrubs may be used, e.g., Aucuba, Box, Euonymus, and Berberis Aquifolium.

Hardy Ferns. The hardy Fern border may be made one of the most interesting parts of the garden. If Ferns alone are grown, transplanting may be done in spring ; but when bulbs and shade-loving perennials are included, November is usually the time chosen to carry out the work. Leaf-mould is excellent material to mix in the soil.

THE KITCHEN GARDEN.

Autumn Broccoli. Many of these will now have developed perfect "heads." Pull them up and store all not required for use in an open shed, or replant in a sheltered spot with the "heads" facing towards the north.

The Garden Frame. Continue to fill spare frames with Lettuce or Endive ; 6 inches of space between the plants will be ample, allowing rather more between the rows. Water thoroughly, and ventilate the frame freely in mild weather.

Lifting Beetroot. If the roots are to keep well, storing between layers of sand, soil, or ashes is advised. Twist off the tops rather than cut them off. Avoid bruising the roots when storing.

Lifting Carrots. Carrots growing on heavy soil should be lifted without delay. Storing as advised for Beetroot is recommended. If a dry shed is not available, store under the shelter of a warm wall, covering the heap with clean straw, and give a final covering with soil or ashes in January.

Late-sown Carrots. It is generally of little use allowing these to remain longer in the open ground, but if the bed is in a sheltered position and straw for covering is available, a little of this strewn over the bed on frosty nights will ensure continued growth for some time yet.

Salsify. The roots of this soon lose their value if taken up and allowed to remain in boxes or on a floor without a covering of fine soil. Storing between layers of ashes is better; but perhaps the best way of all to keep the roots fresh is to allow them to remain in the bed, covering this with leaves or hay during severe weather.

Winter Greens. In cutting these, especially the Scotch or Curled Kale, do not cut away the largest of the leaves and thus expose the stem to frosts. New sprouts will develop much more rapidly if the large leaves are allowed to remain. During severe frosts the large leaves hang down and form a natural protection to the stem.

Endive. Blanch fully-grown plants by covering the hearts with flower-pots, or by placing a tile or flat piece of board on the plants; examine them occasionally to get rid of soil pests.

Earthing Celery. During dry weather give the earliest rows the finishing touches; place fine soil nearly up to the tops of the leaves. Aim at securing a good slope on

each side of the row, making firm with the back of the spade.

Early Seakale. When clearing away the old leaves from this vegetable make a point of noting those crowns which are unusually strong. Such give exceptionally fine produce if placed in slight warmth at the end of the year. Place sticks against those selected.

Cucumbers in a Frame. If the plants are still healthy and have numerous small fruits, placing fresh leaves round the sides of the frame and covering the glass at night with old sacks or matting will often maintain a temperature high enough to bring the fruits to fair size. But after this month it is useless to expect profitable returns from plants in a frame.

Lettuce in a Frame. Keep the soil well watered, but avoid wetting the leaves unnecessarily. If the watering is done early in the day, and a little ventilation given later, loss from dampness will be reduced to a minimum.

Value of Vegetable Refuse. Collect all rubbish of a decayable nature, including fallen leaves, Potato or Carrot peelings, Cabbage leaves or old Cabbage stumps. Put all into a heap, adding soot freely, and turn occasionally during the winter; next spring this heap will be useful for placing in the bottom of the trench for early Peas, to be followed later by maincrop Celery.

THE GREENHOUSE.

Hardy Plants in Pots. If such as Primroses, Wallflowers, and Forget-me-nots are grown in the garden it is often possible to find a few showing flower earlier than the others. If such are lifted and potted they will form a bright feature in the greenhouse in early spring.

Bridal Wreath (*Francoa ramosa*).

This favourite flowering plant, which is so pleasing in the greenhouse in summer, should be kept moderately dry now. It will then obtain partial rest, and will start into growth all the better in spring. About the end of February the plants should be repotted.

Winter Cherry (*Solanum capsicastrum*). The berries of this should now be colouring rapidly; if they are backward, care should be taken to give them the sunniest spot in the greenhouse. A little additional heat will greatly assist the colouring. Care must be taken that there are no mice in the greenhouse, otherwise they will eat the berries as they change colour.

Cuttings of Zonal Pelargoniums.

Whether these are in pots or boxes, they should be given as light a position in the greenhouse as possible. Remove all decaying foliage, otherwise the other leaves will become affected. Only sufficient water must be given to keep the soil moderately moist.

Blue African Lily. If this plant has been out of doors during the summer it must now be removed to winter quarters. A greenhouse is not necessary for their protection at that season. They must be kept safe from frost, but, given this condition, they may be wintered in a shed.

Arum Lily. Whether the plants were "dried off" during the summer or planted out at that season and lifted later on, they will now be growing freely. They are moisture-loving plants, and consequently liberal supplies of water should be given. A watch must be kept for aphides or greenfly.

Cape Primrose (*Streptocarpus*).

After flowering throughout the greater part of the summer the blossoms of these will now be past. The mistake is often made of drying off the plants after the manner of Gloxinias, to which they are nearly allied. But the *Streptocarpus* does not form solid tubers like the Gloxinia; consequently the soil should be kept slightly moist.

Winter-flowering *Salvias*. The different *Salvias* available for autumn and winter blooming include the scarlet-flowered *Salvia splendens* and the blue *S. Pitcherii*, known also as *S. azurea grandiflora*. When these are out of bloom they should be cut down to within a foot of the pot. This will encourage the formation of young shoots, which may be taken as cuttings in spring.

The Wax Flower (*Hoya carnosa*).

Failures in the cultivation of this pretty flowering climbing plant are by no means infrequent. The cause is often an excess of moisture, either in the atmosphere or at the roots, especially at this season. Good drainage must be given, and the soil should be equal parts of loam and peat, with some broken brick rubble and sand.

Hardy Plants for the Greenhouse.

Such as *Dielytra spectabilis*, Lily of the Valley, Solomon's Seal, *Spiræa japonica*, etc., are grown in pots for the embellishment of the greenhouse in spring. If they were planted out during the summer no time should now be lost in lifting and potting them. After this they may be stood out of doors for a time, and kept watered before being taken into frame or greenhouse.

Early-flowering *Gladioli*. These are very useful for the decoration

of the greenhouse in late spring or early summer. When required for this purpose the bulbs may be potted now. Six to eight bulbs in 5-inch pots are effective. The soil should consist mainly of loam, lightened by a little leaf-mould or well-decayed manure, and sand. When potted they should be placed in a frame and protected from frost.

Palms in Winter. The different Palms require a liberal amount of water at all seasons, but a good deal less is needed now than during hotter and drier weather. Scale insects are apt to attack the leaves. If these pests are few they may be removed by means of a blunt-pointed piece of wood, taking care not to bruise the leaves. Then sponge the plants with soapy water.

The Cold Frame. A cold frame is a very useful addition to the garden. It forms, as it were, a stepping-stone from the open ground to the greenhouse. Even if well covered up, plants in a frame are apt to get frozen during very severe weather. When this happens they should not be uncovered at once on the return of milder weather, but allowed to remain quite dark till completely thawed.

Potting Tulip Bulbs. Even now it is not too late to obtain satisfactory results if the bulbs are potted at once. They may be used either in pots or bowls. There is an idea that for bowls prepared fibre is necessary, but the bulbs will bloom just as well in ordinary potting soil with a liberal amount of sand.

Flowering Cacti. At this season the Cacti should only be given sufficient water to keep the soil slightly moist. If they are treated as room plants a sunny window

should be assigned them. At the same time it must be remembered that the window is the coldest part of the room, and in the event of sharp frosts the plants should be moved to the centre.

THE FRUIT GARDEN.

Planting Fruit Trees. Where the ground is in a suitable state—i.e., not too wet—and there are trees or bushes to plant, get them in as quickly as possible.

Staking Newly-planted Trees. After planting, all standard trees should be properly staked. The stakes ought to be driven well into the ground. Fastenings should be so placed that they do not rub the bark and cause wounds. Place the base of the stake among the roots before the latter are covered, then no damage will be done.

How to Keep Grapes. Grapes can be cut and kept by bottling. The bunches should be cut with about 6 inches of stem, so that the latter reaches the water when in the bottle; the bottle should be at an angle, then the bunch of Grapes will hang perpendicularly. In a cool, dry, airy room the Grapes will keep as long as if allowed to remain on the vines.

Planting Peach Trees. There is no better time than November in which to plant Peaches and Nectarines. In some soils and sites the natural soil will need little, if any, addition, even when the trees are planted under glass, but generally it is necessary to make a border $2\frac{1}{2}$ feet deep and 4 feet or so wide. Put in a good layer of broken bricks and stones, then fill with chopped turf with which lime rubble has been mixed freely.

Protecting Gooseberries from Birds. In some gardens birds are

very troublesome, and special pains have to be taken to prevent serious damage being done. One way of preventing the buds being taken by the birds is to tie the bushes up in cone-like bundles. This will make the centres of the bushes safe; lime can be dusted over the bushes when they are wet. Do not prune until the spring, when the birds will find other food to attract them.

Planting Wall Fruit Trees. When planting Apples on the Crab stock, and Pears on the Pear stock, the trees should be 20 feet apart on a wall or fence. When, however, the trees are on the Paradise and Quince stocks respectively, they can be planted at 12 feet apart, though 15 feet is better in most cases. Fan-trained Peaches, Cherries and Apricots should be 18 feet apart.

Planting Fruit Trees. Trees should have immediate attention on arrival from the nursery. If for any reason planting has to be delayed the trees should be laid in a trench, the roots well covered with soil and watered. There should, however, be as little delay as possible; the sooner they are in their permanent positions the better will be their prospect of successful growth in the future.

Pruning Plum Trees. Most people deal too drastically with Plum trees when pruning them. We should bear in mind that all the stone fruits will flower and bear fruit on the young growths of the preceding year. Plums do not fruit well from old, straggling fruit spurs; young shoots must be allowed to grow to replace old branches as room can be found from time to time.

Manuring Bush Fruits. The best manure for Currants and Goose-

berries is no doubt that from yards and stables. Some of this, if forked into the soil in the autumn of alternate years, will be found sufficient to keep the bushes vigorous. Failing yard manure, fish guano and soot will be found of great benefit.

Improving Old Fruit Trees. Steps should be taken to get the work of cleansing and manuring done at once. If the trees have been neglected and the branches are covered with moss and lichen, spray with caustic soda solution, 1 lb. to 10 gallons of water. Cut out dead, diseased and otherwise useless branches.

Planting Blackberries. There is an impression that the Blackberry of the hedges is superior in flavour to the named sorts. This is a mistake, as the Parsley-leaved Blackberry (*Rubus laciniatus*) is very fine both for size and flavour. The plants should be put in good soil 10 feet apart.

Apple Trees on a Wall. Some of the best dessert Apples might well be found room for on a wall or fence, especially in midland and northern districts. In many cases they would be of more profit and pleasure than uncertain Plums and Peaches. The best only of the dessert varieties should be used for this purpose. American Mother, Ribston Pippin and Cox's Orange are three of the best.

DECEMBER.

THE FLOWER GARDEN.

Fuchsias in Winter. It is important to examine Fuchsias stored during the winter. While the soil should be moderately dry, it must not be dust-dry, or the Fuchsia

stems will wither ; on the other hand, a wet condition causes premature growth or decay of the stems.

Grey-leaved Plants. In mid-winter these are a pleasing feature in the garden. Lavender, the Cotton Lavender (*Santolina chamæcyparissus*), *Cerastium tomentosum*, *Artemisia stelleriana*, *Stachys lanata*, and Border Pinks all have pleasing grey-toned foliage ; so, too, have some of the Saxifrages, notably *S. crustata* and *S. rocheiliana*.

Bulbs in Store. Flowering bulbs at rest must not be neglected. Look over Tuberous Begonias in sand or light soil, and remove those which are decaying. The bulbs, or corms, of *Gladiolus* should be cleaned from the stems and placed thinly on a shelf or in a box. No covering is necessary except to preserve them from frost.

Winter-flowering Shrubs. The white sprays of *Laurustinus* (*Viburnum Tinus*) are appreciated in the garden in mid-winter, and are useful for cutting. This shrub is propagated by cuttings in autumn in a cold frame, and by layering ; the lower shoots may be pegged down now. *Jasminum nudiflorum* (yellow Winter Jasmine) produces a profusion of yellow blossoms on long, slender sprays. As a climber it is best on a north or west wall, being then less damaged by frost. It is readily propagated by layering the lower shoots.

THE KITCHEN GARDEN.

Brussels Sprouts. Remove all bottom leaves which have turned yellow, burying them in a deep hole in an out-of-the-way corner. In spring, when thoroughly decayed,

they will be found useful for placing in trenches for early Peas.

Covering Seakale. Where fresh stable manure is scarce a good covering of dry leaves placed over Seakale will quickly excite root action ; although the top growth will be less rapid than when fresh manure is used, the produce will be of high quality.

Winter Turnips. If the soil is heavy it is a good plan to lift and store August-sown Turnips, as they will not increase in size now ; they withstand a good deal of frost, but a constantly wet soil causes many of them to split.

Protecting Winter Spinach. A little dry hay, straw or shavings strewn over rows of this valuable winter vegetable will often prevent its destruction during severe frosts ; or if a supply of bushy sticks is on hand, the use of these is even better.

Cauliflowers in Frames. If these are to be kept sturdy, ventilation must be given every day during this month ; in fact, during a mild period the frame should not be entirely closed at night, or weakly plants will result. Keep the soil only slightly moist.

Ripe Vegetable Marrows. Vegetable Marrows which, since early autumn, have been suspended from the roof of a dry shed, or stored on shelves, should now be examined, and those showing large dark spots be immediately removed for use.

Spring Cabbage Plants. Examine beds of these, making good any blanks ; give the soil a good treading immediately after frost has left the ground.

Potatoes in Clamps. During mild weather examine those which have been stored since August. A short

time spent in removing decayed tubers may prevent serious loss.

Lifting Jerusalem Artichoke. This is hardy, and is best left in the ground to be dug as required for use; but in order that no shortage in the supply may be experienced lift a few roots now, storing them in ashes as a reserve to draw upon during severe weather.

Late Cauliflowers. These are much more tender than Broccoli, even a few degrees of frost following a mild period being sufficient to discolour the heads. If pulled up by the root they may be relied upon to keep fresh for several weeks if stored in a dry shed or cellar.

Protecting Globe Artichoke. Give the clumps a covering of ashes to the depth of 10 or 12 inches; this covering should be kept on until early spring, or in the event of severe frost much damage may follow.

Cottager's Kale. When cutting this most useful vegetable be careful not to take away a larger number of the lower leaves than necessary. The perpetual bearing character of this plant is astonishing, but its full value is only realised by those who use discretion in gathering the first supplies.

Protecting Celery. In a wet season much Celery is lost owing to decay. The chief cause of this is inadequate or improper earthing-up. After this date it is unwise to leave rows of Celery without protection. On heavy soil the most popular plan is to bank up the soil almost level with the tips of the plants. Beat it down very firmly with the back of the spade, forming a ridge-shaped bank which will throw off the water effectually. On light soils wooden shelters made

from boards 9 to 12 inches wide, nailed together at each end, and placed over the top of the row, will give adequate protection from rain or frost.

THE GREENHOUSE.

Clivia miniata. This is remarkable for its large heads of salmon-coloured flowers in early spring. Once established it does not need repotting annually, but is benefited by a top-dressing of loamy soil at this season.

Cinerarias in Winter. Cinerarias require a light, airy position in the greenhouse at this season. Watering must be carefully done, as an excess of moisture at the roots is likely to prove fatal. In the case of fully established plants, watering with liquid manure and soot water combined about every ten days is beneficial.

Winter-flowering Geraniums. Plants required to flower throughout the winter should be kept in a temperature of 50 to 60 degrees. All decaying flowers and leaves should be removed. The leaves must not be stripped off, but separated with a sharp knife near the base of the stalk.

Winter Treatment of Bouvardia. When no longer attractive Bouvardias may be placed closer together on the greenhouse stage. They must then be kept drier at the roots in order to give them partial rest. Early in the new year straggling shoots may be shortened and an increased amount of water given.

Scarborough Lily. After the flowering season is over the bulbs of this plant (*Vallota purpurea*) are often kept so dry that the leaves die off. Success cannot then be hoped for, as it grows naturally

during the winter and early spring. Throughout that time it should be given a light position in the greenhouse, and the soil must be kept moderately moist.

Bulbs in Pots. If these have been potted, placed out of doors and covered with some protective material they will have started into growth, and should be taken into a frame. If the earliest are removed to the greenhouse they will flower before the others. Bulbs should never be allowed to get dry at the roots once they have started into growth.

THE FRUIT GARDEN.

Cooking Apples for Small Gardens. The following have been well tried and have proved worthy of being planted where space is limited: Early Victoria, Stirling Castle, Golden Spire, Lord Grosvenor, Lane's Prince Albert, Potts' Seedling, Rev. W. Wilks and Bismarck.

Autumn-fruiting Raspberries. These are useful for gathering in autumn, and may be planted now. The canes are cut down early in the year, and those which afterwards spring up bear fruit in the autumn. The plants need generous treatment in summer to ensure free growth, or they will fail to produce fruit. November Abundance and Hailsham-berry are both good sorts.

Top-dressing Fruit Borders. Whether trees are growing under glass or out of doors, the roots usually derive benefit from a generous top-dressing. A mulch of decayed manure spread evenly over the surface will do much good. Fresh loam to which has been added a proportion of bonemeal is also suitable. The loose top soil of the border should be first raked off.

Suckers on Fruit Trees. On Plums, Nectarines, and Peaches suckers, or growths from the stock on which the true variety is grafted, are liable to become a nuisance. They have a bad effect upon the trees, and greatly hinder cultivation if allowed to grow unchecked. At this time of year the roots can be bared and the suckers cut away with a sharp knife. Avoid severing the roots.

Lime for Fruit Trees. Lime is a necessary ingredient in the soil in which stone fruits are planted. Mortar rubble should be mixed with the soil at planting time. A light sprinkling of fresh lime worked into the ground for established trees will prove of benefit. Apples, Plums, Nectarines and Peaches need lime chiefly.

Pruning Standard Apple Trees. The first few years after planting it will be found necessary to prune. Cut back the shoots to about one-third of their length, and do not allow any growths to cross each other. Cut to an outside bud as far as is possible. After the third or fourth year regular pruning will not be needed, but from time to time, as required, the branches must be thinned and pruned.

Planting Plum Trees. Do not plant these in low-lying positions, or frost may ruin the blossoms. For cooking, plant Victoria, The Czar and Belle de Louvain, and the old yellow Pershore. Good dessert sorts are Cambridge Gage, Early Transparent, and Jefferson.

Cherries on Walls. The sweet Cherries do well on any aspect, and the Morello thrives facing north. Good varieties are Early Rivers, May Duke, Governor Wood, White Heart, and Black Tartarian.

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